MTNC030623C1
B01/B05

# Service Manual

Color Television

## CT-25L8G / CT-25L8UG / CT-20L8G / CT-20G8G / CT-20G8SG
NA10

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**⚠ WARNING**

This service information is designed for experienced repair technicians only and is not designed for use by the general public.
It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product.
Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

**Panasonic®**

**IMPORTANT SAFETY NOTICE**

There are special components used in this equipment which are important for safety. These parts are marked by ⚠ in the Schematic Diagrams, Circuit Board Diagrams, Exploded Views and Replacement Parts List. It is essential that these critical parts should be replaced with manufacturer's specified parts to prevent shock, fire or other hazards. Do not modify the original design without permission of manufacturer.

# 1. Safety precautions

### General guidelines

**An isolation transformer should always be used during the servicing of a receiver whose chassis is not isolated from AC power line. Use a transformer of adequate power rating as this protects the technician from accidents resulting in personal injuryfrom electrical shocks. It will also protect the receiver from being damaged by accidental shorting that may occur during servicing.**

**When servicing, observe the original lead dress, especially in the high voltage circuit. Replace all damaged parts (also parts that show signs of overheating.)**

**Always replace protective devices, such as fish paper, isolation resistors and capacitors, and shields after servicing the receiver. Use only manufacturer's recommended rating for fuses, circuits breakers, etc.**

**High potentials are present when this receiver is operating. Operation of the receiver without the rear cover introduces danger for electrical shock. Servicing should not be performed by anyone who is not thoroughly familiar with the necessary precautionswhen servicing high voltage equipment.**

**Extreme care should be practiced when handling the picture tube. Rough handling may cause it to implode due to atmospheric pressure. (14.7 lbs per sq. in.). Do not nick or scratch the glass or subject it to any undue pressure. When handling, usesafety goggles and heavy gloves for protection. Discharge the picture tube by shorting the anode to chassis ground (not to the cabinet or to other mounting hardware). When discharging connect cold ground (i.e. dag ground lead) to the anode with a wellinsulated wire or use a grounding probe.Avoid prolonged exposure at close range to unshielded areas of the picture tube to prevent exposure to x ray radiation.**

**The test picture tube used for servicing the chassis at the bench should incorporate safety glass and magnetic shielding. The safety glass provide shielding for the tube viewing area against x ray radiation as well as implosion. The magnetic shieldlimits the x ray radiation around the bell of the picture tube in addition to the restricting magnetic effects. When using a picture tube test jig for service, ensure that the jig is capable of handling 50kV without causing x ray radiation.**

**Before returning a serviced receiver to the owner, the service technician must thoroughly test the unit to ensure that is completely safe to operate. Do not use a line isolation transformer when testing.**

## Leakage current cold check

**Unplug the A.C. cord and connect a jumper between the two plug prongs.Measure the resistance between the jumpered AC plug and expose metallic parts such as screwheads, antenna terminals, control shafts, etc. If the exposed metallic part has a returnpath to the chassis, the reading should be between 240kΩ and 5.2MΩ. If the exposed metallic part does not have a return path to the chassis, the reading should be infinite.**

## Leakage current hot check

**Plug the AC cord directly into the AC outlet. Do not use an isolation transformer during the check.**

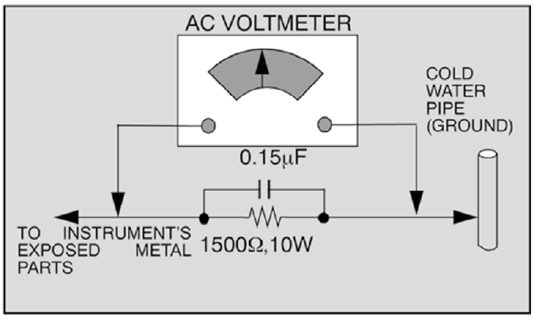
**Connect a 1.5kΩ 10 watt resistor in parallel with a 0.15 μF capacitor between an exposed metallic part and ground. Use earth ground, for example a water pipe.**

**Using a DVM with a 1000 ohms/volt sensitivity or higher, measure the AC potential across the resistor.**

**Repeat the procedure and measure the voltage present with all other exposed metallic parts.**

Verify that any potential does not exceed 0.75 volt RMS. A leakage current tester (such a Simpson model 229, Sencore model PR57 or equivalent) may be used in the above procedure, in which case any current measure must not exceed 0.5 milliamp. Ifany measurement is out of the specified limits, there is a possibility of a shock hazard and the receiver must be repaired and rechecked before it is returned to the customer.

**Hot check circuit**



### Insulation test

Connect an insulation tester between an exposed metallic part and A.C. line. Apply 1080VAC/ 60Hz for 1 second. Confirm that the current measurement is 0.5mA ~ 2.0mA. Repeat test with other metallic exposed parts.

### X ray radiation

**WARNING**

The potential source of x ray radiation in the TV set is in the high voltage section and the picture tube.

**NOTE**

It is important to use an accurate, calibrated high voltage meter.

Set the brightness, picture, sharpness and color controls to minimum.
Measure the high voltage. The high voltage should be 27.70 ± 1.25kV for 20” models and 29.25 ± 1.25kV for 25” models . If the upper limit is out of tolerance, immediate serviceand correction is required to insure safe operation and to prevent the possibility of premature component failure.

### Horizontal oscillator disable circuit test

This test must be performed as a final check before the receiver is returned to the customer. See horizontal oscillator disable circuit procedure check in this manual.

## 2. Service notes

**NOTE**

These components are affixed with glue. Be careful not to break or damage any foil under the

**component or at the pins of the ICs when removing. Usually applying heat to the component for a short time while twisting with tweezers will break the component loose.**

### Leadless chip component (surface mount)

**Chip components must be replaced with identical chips due to critical foil track spacing. There are no holes in the board to mount standard transistors or diodes. Some chips capacitor or resistor board solder pads may have holes through the board,however the hole diameter limits standard resistor replacement to 1/8 watt. Standard capacitor may also be limited for the same reason. It is recommended that identical components be used.**

**Chip resistor have a three digit numerical resistance code, 1st and 2nd significant digits and a multiplier. Example: 162 = 1600 or 1.6k Ω resistor, 0 = 0 Ω (jumper).**

**Chip capacitors generally do not have the value indicated on the capacitor. The color of the component indicates the general range of the capacitance.**

**Chip transistors are identified by a two letter code. The first letter indicates the type and the second letter, the grade of transistor.**

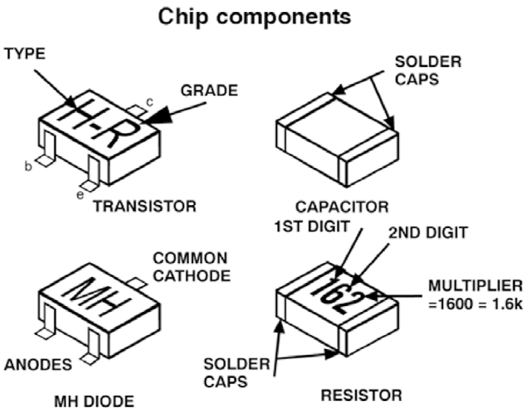
**Chip diodes have a two letter identification code as per the code chart and are a dual diode pack with either common anode or common cathode. Check the parts list for correct diode number.**

### Component removal

1. **Use solder wick to remove solder from component end caps or terminal.**
2. **Without pulling up, carefully twist the component with tweezers to break the adhesive.**
3. **Do not reuse removed leadless or chip components since they are subject to stress fracture during removal.**

### Chip component installation

1. **Put a small amount of solder on the board soldering pads.**
2. **Hold the chip component against the soldering pads with tweezers or with a miniature alligator clip and apply heat to the pad area with a 30 watt iron until solder flows. Do not apply heat for more than 3 seconds.**

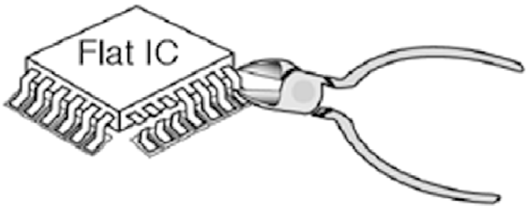


Chip components

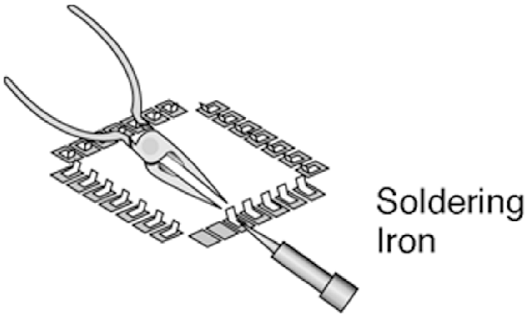
TYPE
GRADE
H-R
c
b
e
TRANSISTOR
SOLDER CAPS
CAPACITOR
COMMON CATHODE
MH
ANODES
MH DIODE
1ST DIGIT
2ND DIGIT
162
MULTIPLIER =1600 = 1.6k
SOLDER CAPS
RESISTOR

## How to replace flat ic (required tools)

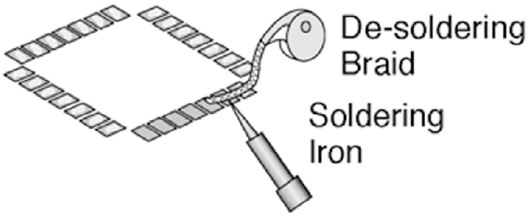
**1. Remove the solder from all of the pins of a Flat IC by using a desolder braid**



**2. Put the iron wire under the pins of the Flat IC and pull it in the direction indicated while heating the pins using a soldering iron. A small awl can be used instead of the iron wire.**

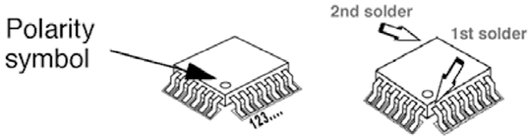

Soldering Iron

**3. Remove the solder from all the pads of the Flat IC by using a de solder braid**

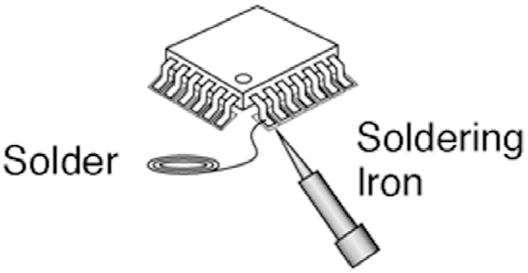

De-soldering Braid
Soldering Iron

**4. Position the new Flat IC in place (apply the pins of the Flat IC to**

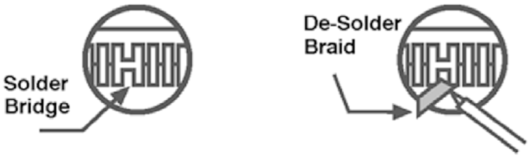
the soldering pads where the pins need to be soldered). Properly determine the positions of the soldering pads and pins by correctly aligning the polarity symbol



5. Solder all pins to the soldering pads using a fine tipped soldering iron



6. Check with a magnifier for solder bridge between the pins or for dry joint between pins and soldering pads. To remove a solder bridge, use a de solder braid as shown in the figure below



**IMPORTANT**

**To protect against possible damage to the solid state devices due to arching or static discharge, make certain that all ground wires and CRT DAG wire are securely connected.**

**CAUTION**

**The power supply circuit is above earth ground and the chassis cannot be polarized. Use an isolation transformer when servicing the receiver to avoid damage to the test equipment or to the chassis. Connect the test equipment to the proper ground(hot) or (cold) when servicing, or incorrect voltages will be measured.**

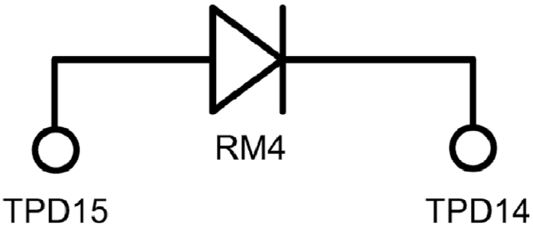
## 2.1. X-Ray Protection Circuit Check& Adjustments

**This test must be performed as final check before the receiver is returned to the customer. If voltages are out of tolerance, immediate service and correction is required to insure safe operation and to prevent the possibility of premature componentfailure.**

**Equipment:**

1. Isolation transformer.
2. High voltage meter.
3. D.C. Ammeter
4. Short jumper.
5. HHS jig (See figure below).

**Diode Connection Jumper.**



**Preparation:**

1. Make sure the receiver is turned off.
2. Connect the receiver to an isolation transformer.
3. Connect the ammeter serial from the flyback anode lead to the picture tube anode socket.
4. Prepare short jumper and HHS jig.

**Procedure:**

1. Connect the short jumper between TPD16 & TPD17.
2. Connect the jumper diode between TPD14 and TPD15 (anode connected to TPD15 and cathode to TPD14).
3. Apply 75VAC to AC input of isolation transformer.
4. Turn the receiver on.
5. Apply a monoscope pattern.
6. Set customer picture and brightness controls to the minimum.
7. tSet current within 50 μ A to 100 μ A by changing the picture and bright controls.

8. **Slowly increase AC voltage at the input of the isolation transformer and confirm HHS voltage measure 31kV for 20” models and 33kV for 25” models.**
9. **Turn power off and remove jigs.**

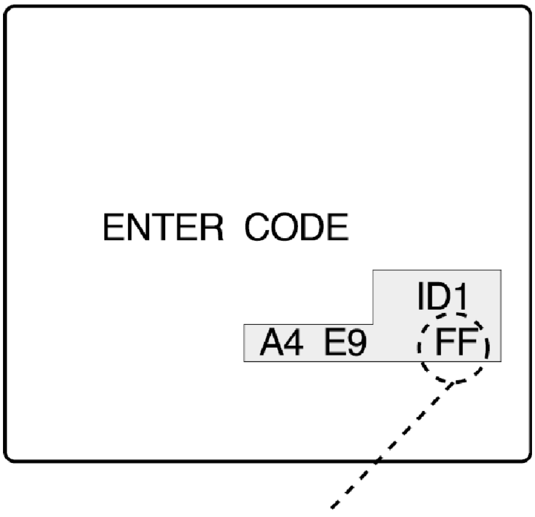
## 3. EEPROM replacement

**If a new EEPROM integrated circuit is replaced for servicing, follow the next procedure once that the memory is properly assembled:**

1. **Turn the TV set ON.**
2. **Enter to service mode.**
3. **Once inside service mode the first image that appears on-screen is the ID1 register with the respective address value (FF) like the image below.**

   **Note:**

   **All 3 registers (ID1,ID2,ID3) should appear with FF values if a new EEPROM is assembled.**



VALUE TO MODIFY

4. **With “VOL” keys adjust the correct value according with the service adjustment table (see “Service Mode” section in page 15).**
5. **Change to the next ID switch register with “CH” keys and repeat the same procedure as step 4.**
6. **When replacing a new EEPROM be sure to set the correct ID switch values for each model.**

7. Once that all 3 registers are set with the correct address value, perform all of the remaining adjustments and servicing.

**IMPORTANT:**

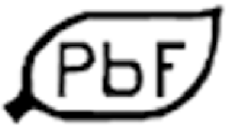
Correct ID switch configuration should be input when replacing EEPROM for each television model, otherwise if wrong values are configured, the television software will not function accordingly and properly.

## 4. About lead free solder (PbF)

**NOTE**

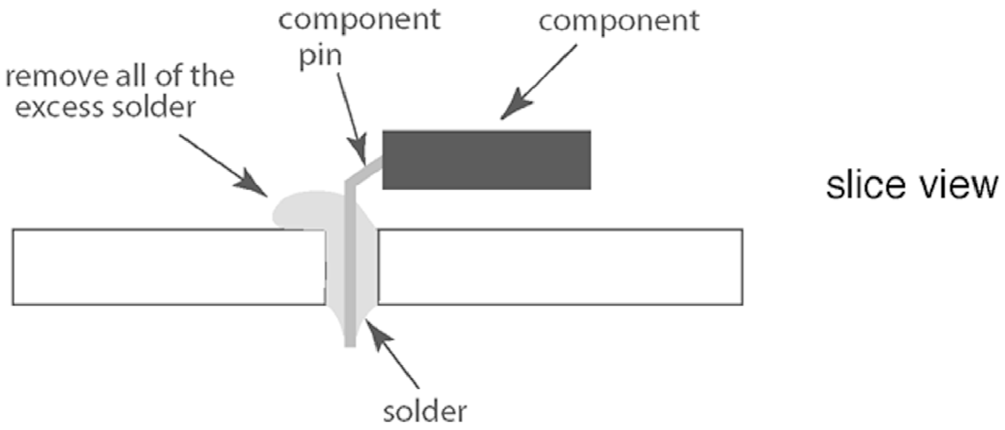
Lead is listed as (Pb) in the periodic table of elements. / In the information below, Pb will refer to lead solder, and PbF will refer to Lead Free Solder. / The lead free solder used in our manufacturing process and discussed below is (Sn+Ag+Cu). / Thatis Tin (Sn), Silver (Ag) and Copper (Cu) although other types are available.

This model uses Pb Free solder in it’s manufacture due to environmental conservation issues. For / service and repair work, we’d suggest the use of Pb free solder as well, although Pb solder may be / used. / PCBs manufacturedusing lead free solder will have the “PbF” or a leaf symbol stamped on the / back of PCB.



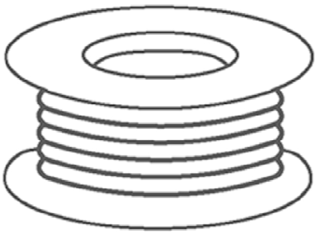
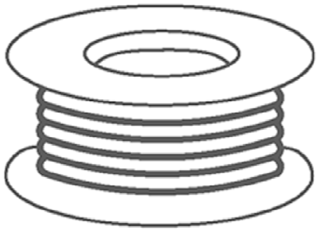
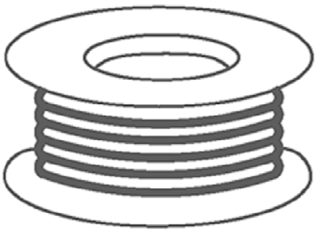
**CAUTION**

- Pb free solder has a higher melting point than standard solder. Typically the melting point is 50 ~ 70 °F (30 ~ 40 °C) higher. Please use a high temperature soldering iron and set it to 700 ± 20 °F (370 ± 10 °C).
- Pb free solder will tend to splash when heated too high (about 1100 °F or 600 °C). / If you must use Pb solder, please completely remove all of the Pb free solder on the pins or solder area before applying Pb solder. If thisis not practical, be sure to heat the Pb free solder until it melts, before applying Pb solder.
- After applying PbF solder to double layered boards, please check the component side for excess solder which may flow onto the opposite side.


component
pin
component
remove all of the
excess solder
slice view
solder

**Suggested Pb free solder**

**There are several kinds of Pb free solder available for purchase. This product uses Sn+Ag+Cu (tin, silver, copper) solder. However, Sn+Cu (tin, copper), Sn+Zn+Bi (tin, zinc, bismuth) solder can also beused.**

| 0.3mm X 100g | 0.6mm X 100g | 1.0mm X 100g |
|---|---|---|
|  |  |  |

# 5. Receiver feature table

| FEATURE/MODEL | CT-25L8G/UG | CT-20L8G | CT-20G8G/SG |
|---|---|---|---|
| CHASSIS | AP403 | BP398 | AP398 |
| MICRO | 128K | | |
| MENU LANGUAGE | ENG/SPAN/FR | | |
| CLOSED CAPTION | X | | |
| V-CHIP (USA/CANADA) | X | | |
| CHANNEL COUNT | 181 | | |
| REMOTE CONTROL | EUR7713010 | | |
| CRT SUPPLIER | PANABLACK, SAMSUNG | | |
| CHASSIS | NA10 | | |
| COMB FILTER | DIGITAL | | |
| V/A NORM (X=BOTH) | V | | |
| MTS/SAP/DBX | X | | |
| BUILT-IN AUDIO POWER | 1.5Wx2 (10%) | | |
| No. OF SPEAKERS | 2 | | |
| AI SOUND | X | | |
| A/V IN (REAR/FRONT) | 2(2/1) | | 1(1/1) |
| COMPONENT INPUT (Y, Pb, Pr) | 1 | ---- | |
| S-VIDEO INPUT (REAR/FRONT) | 2/1 | 1/0 | |

**Note:**

**Specifications are subject to change without notice or obligation. Dimensions and weights are approximate.**

# 6. Board description table

**CT-20G8/CT-20G8S**

| BOARD | PART NUMBER | DESCRIPTION |
|---|---|---|
| A | TNP2AH047AA | MAIN BOARD |
| C | TNP2AA122AA | CRT BOARD |

**CT-20L8G**

| BOARD | PART NUMBER | DESCRIPTION |
|---|---|---|
| A | TNP2AH047AB | MAIN BOARD |
| C | TNP2AA122AA | CRT BOARD |

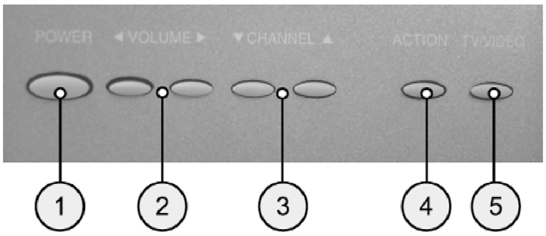
**CT-25L8G/CT-25L8UG**

| BOARD | PART NUMBER | DESCRIPTION |
|---|---|---|
| A | TNP2AH047FA | MAIN BOARD |
| C | TNP2AA122FA | CRT BOARD |

**NOTE**
**When ordering a replacement board assembly, append an “S” to the board number**

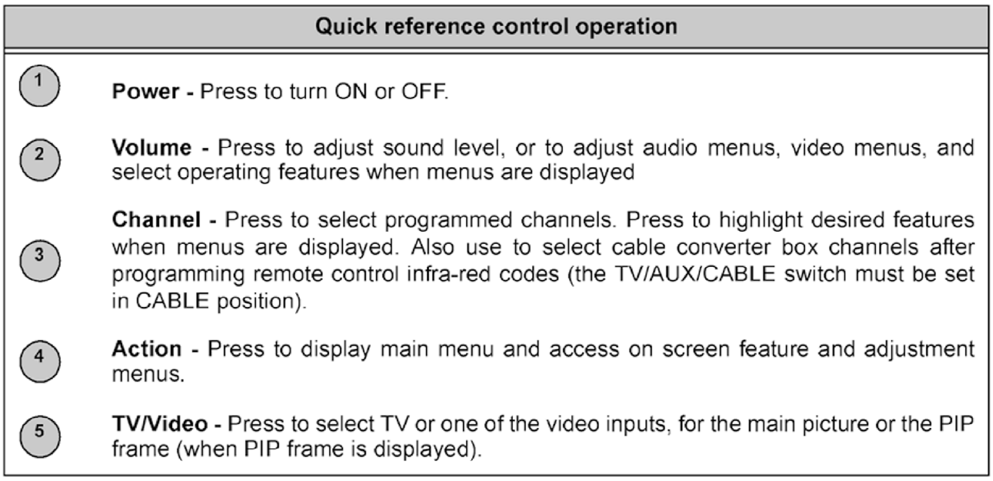
**EXAMPLE**
**To order the A Board, the replacement board is TNP2AH047AAS.**

# 7. TV Location of controls



HPJ
VIDEO 2
L-AUDIO IN-R

IR Sensor
& Front A/V jacks



| Quick reference control operation | |
|---|---|
| 1 | **Power -** Press to turn ON or OFF. |
| 2 | **Volume -** Press to adjust sound level, or to adjust audio menus, video menus, and select operating features when menus are displayed |
| 3 | **Channel -** Press to select programmed channels. Press to highlight desired features when menus are displayed. Also use to select cable converter box channels after programming remote control infra-red codes (the TV/AUX/CABLE switch must be set in CABLE position). |
| 4 | **Action -** Press to display main menu and access on screen feature and adjustment menus. |
| 5 | **TV/Video -** Press to select TV or one of the video inputs, for the main picture or the PIP frame (when PIP frame is displayed). |

# 8. Location of controls (EUR7713010 remote)

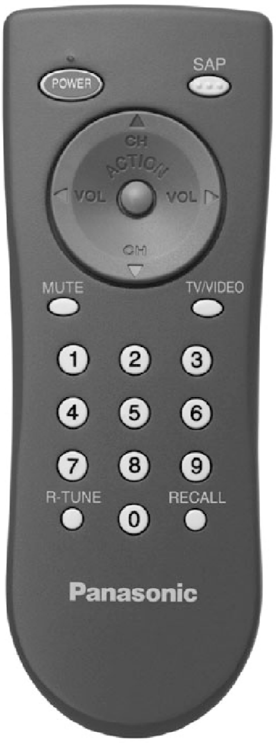
POWER
Press to turn ON and OFF.

VOL
Press to adjust TV sound and navigate in menus.

MUTE
Press to mute sound.

KEYBOARD
Press to select any channel.

R-TUNE
Press to switch to previously viewed channel or video mode.



SAP
Press to acces the secondary audio program broadcast.

CH
Press to select next or previous channel and navigate in menus.

TV/VIDEO
Press to select TV, Video mode.

RECALL
Press to display time, channel sleep timer and other options.

**Note:**
**For additional information about this remote please refer to the owner's manual section remote operation, listed on the parts list section.**

# 9. Dissasembly for service

**Back cover**
**Remove all the screws marked with an arrow ( ← ) from the back of the receiver**

**NOTE**
**Screw configuration, type, and number of screws vary depending on the model of the receiver serviced and the application; variou's models are covered in this manual. Use same hardware when reassembling the receiver.**

- **3 screws at the top edge of the receiver (for 25" sets).**
- **2 screws at the top edge of the receiver (for 20" sets).**
- **1 screw by the A/V jacks.**
- **1 screw at each lower corner of the receiver.**
- **1 screw by the Flyback.**

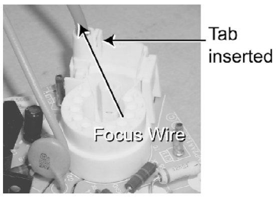
**A-Board - Main chassis**

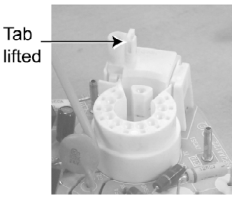
1. **Slide the chassis completely out of the guide rails.**
2. **Stand the receiver on its edge. The underside of the board is completely accessible for component replacement.**

**Note:**
**Some tie-wraps that secure the wire dressings may need to be unfastened for chassis removal.**

**C-Board - CRT output**
**The board plugs onto the socket on the CRT neck. To release the Focus wire, use a dull object to release the tab on the socket (near the wire opening) and carefully pull on the wire. To connect the focus wire, press on the tab to lock it then insertthe wire in the opening and press on it until it is fully inserted and locked in place.**

**Focus cable release**





**Speakers**
**Each speaker is secured to the cabinet with 4 screws.**

**NOTE**
**When reassembling speakers be sure to connect the speaker wires to the correct speaker lead (+) (-)**

## 9.1. Disassembly for CRT replacement

1. **Discharge the CRT as instructed in the "safety precautions".**
2. **Disconnect the yoke (DY) plug, degaussing coil (DEG) plug from the main board.**
3. **Unplug the CRT 2nd anode button from the main board.**
4. **Remove the C-Board from the CRT base and unplug the black wires (CRT dag ground) C10 & C11.**
5. **Disconnect the speakers plug from the A-Board.**
6. **Lift the main chassis (A-Board) and all mounted boards completely out with the CRT board attached.**
7. **Perform complete removal of chassis, as instructed in "disassembly for service" section.**

### CRT replacement

1. **Perform "disassembly for CRT replacement" procedure.**
2. **Insure that the CRT H.V. Anode button is discharged before handling the CRT. Read the "safety precautions" section on handling the picture tube.**
3. **Remove the components from the CRT neck and place the cabinet face down on a soft pad.**
4. **Note the original order for the CRT mounting hardware as they are**

**remove from the CRT mounting brackets at each corner of the CRT.**

5. **Remove the CRT with the degaussing coil and the dag ground braid attached.**
6. **Note the original locations and mounting of the degaussing coil and the dag ground assembly to insure proper reinstallation on the replacement CRT.**
   **To remove and remount the degaussing coil:**
   - **Unhook the coil spring from the bottom corners of the CRT ears.**
   - **Release the braid loop from the upper corners of the CRT ears.**
7. **Mount the dag ground braid on the replacement CRT. Position the degaussing coil with new ties.**
   **Dress coil as was on the original CRT.**
8. **Replace the components on CRT neck and reinstall into cabinet. Verify that all ground wires and circuit board plugs get connected.**
   **IMPORTANT NOTICE**
   **When ordering the CRT, please order CRT and CRT kit also.**
   **Please see parts list section for part numbers**

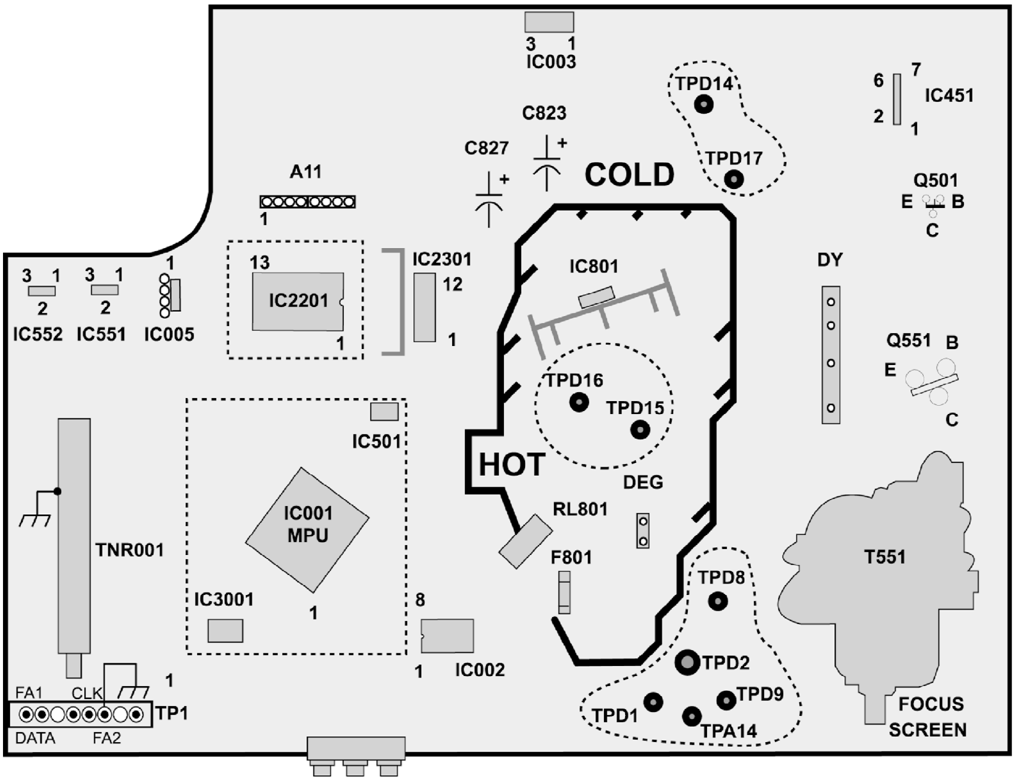
## 10. Chassis service adjustment procedures

**All service adjustments are factory preset and should not require adjustment unless controls and/or associated components are replaced.**

**Note:**

**Connect the (-) lead of the voltmeter to the appropriate ground. Use IC801's heat sink when the HOT ground symbol is used. Otherwise, use COLD ground (Tuner shield, IC451's heat sink or FA2).**

**Component and Voltage Test Points**


IC003
C823
C827
COLD
TPD14
TPD17
IC451
Q501
A11
IC2201
IC2301
IC801
DY
IC552
IC551
IC005
Q551
TPD16
TPD15
IC501
HOT
DEG
IC001
MPU
RL801
TNR001
F801
TPD8
T551
IC3001
IC002
TPD2
TPD9
TPD1
TPA14
FA1
CLK
TP1
DATA
FA2
FOCUS
SCREEN

**Note:**

**Components and test points within doted areas are located on trace side.**

## B+ voltage check

1. **Set the BRIGHT and PICTURE to minimum by using the PICTURE menu.**
2. **Connect the DVM between C825 (+ side) or TPD14 and cold ground.**
3. **Confirm that B+ voltage is 131.0V ± 2.0V. This voltage supplies B+ to the horizontal output and flyback circuits.**

## Source voltage chart

**120V AC line input. Set the BRIGHT and the PICTURE to minimum by using the PICTURE menu. Use cold or hot ground for the (-) lead of the DVM as needed.**

| A-BOARD | TEST POINT | VOLTAGE 20” | VOLTAGE 25 “ |
|---|---|---|---|
| +B2 | TPD14 | 131.0 ± 2.0V | 131.0 ± 2.0V |
| SOUND | C823 (+) | 18.4 ± 1.0V | 18.4 ± 1.0V |
| STB12V | C827 (+) | 12.7 ± 1.0 V | 12.7 ± 1.0 V |
| 220V | TPA14 | 217 ± 10 V | 221 ± 10 V |
| VERTICAL | TPD8 | 23.7 ± 1.5V | 27.1 ± 1.5V |
| 9V | IC551 pin 3 | 9.0 ± 0.5V | 9.0 ± 0.5V |
| 5V | IC552 pin 3 | 5.0 ± 0.5V | 5.0 ± 0.5V |
| 3.3V | IC005 pin 2 | 3.3 ± 0.3V | 3.3 ± 0.3V |
| EHT | CRT anode | 27.70 ± 1.25kV | 29.25 ± 1.25kV |
| HEATER | JK351 H-HGND | 6.3 ± 0.24V | 6.3 ± 0.24V |

### High voltage check

1. **Select an active TV channel and confirm that horizontal is in sync.**
2. **Adjust BRIGHTNESS and CONTRAST using PICTURE icon menu so video just disappears.**
3. **Using a high voltage meter confirm that the high voltage is 27.70 ± 1.25kV for 20” models and 29.25 ± 1.25kV for 25” models.**

## 11. Purity and convergence procedure

**Adjustment is necessary only if the CRT or the deflection yoke is replaced or if the setting was disturbed. The complete procedure consists of:**

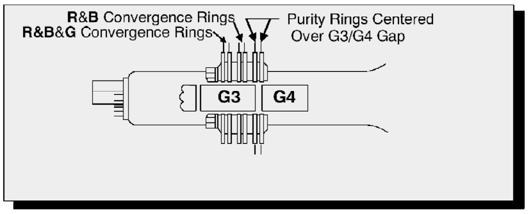
1. **Vertical raster shift adjustment.**
2. **Initial static convergence.**
3. **Setting the purity.**
4. **Final static convergence.**

### WHEN THE CRT OR THE YOKE IS REPLACED

**For 2 piece assembly:**

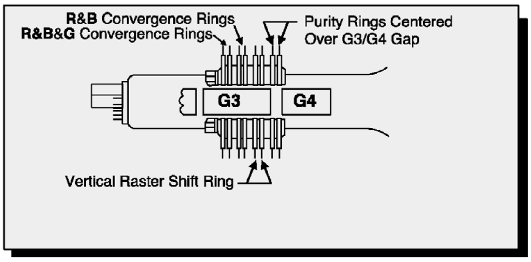
**Position purity/convergence assembly as shown and tighten clamp snugly. Remove the hot-melt glue seal on assembly and position like tabs of purity device together at 12 o’ clock to reduce its magnetic field effect.**

**2 piece assembly**

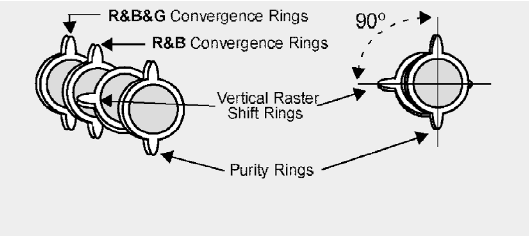

R&B Convergence Rings
R&B&G Convergence Rings
Purity Rings Centered Over G3/G4 Gap
G3
G4

**For models using 4 pairs of rings, place the yoke on the CRT neck (do not tighten the clamp). Place the vertical raster shift tabs at 3 o'clock (90° from the purity and convergence tabs.**

**Description of rings**


R&B Convergence Rings
R&B&G Convergence Rings
Purity Rings Centered Over G3/G4 Gap
G3
G4
Vertical Raster Shift Ring

**Initial position of rings**


R&B&G Convergence Rings
R&B Convergence Rings
90°
Vertical Raster Shift Rings
Purity Rings

**Turn the receiver ON. Operate the receiver for 60 minutes using the first purity check field (white screen) to stabilize the CRT.**
**Fully degauss the receiver by using an external degaussing coil.**
**Slide the deflection yoke back and forth on the neck of the CRT until it produces a near white, uniform raster.**

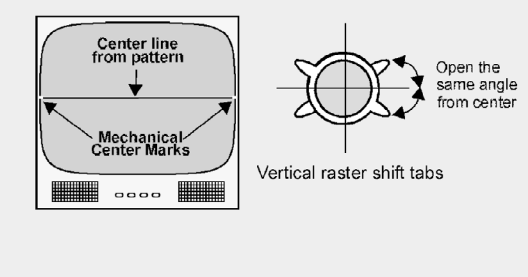
## VERTICAL RASTER SHIFT ADJUSTMENT

**Apply a green pattern with a horizontal line, adjust the Deflection Yoke so that has no tilt, then secure it.**
**Adjust center line of the pattern with the mechanical center of the CRT, this center is determined by two marks at the side edges of the screen. To adjust the line, once the vertical raster shift tabs are place at 3 o'clock to reduce itsmagnetic field effect open the tabs the same angle from the center, until the center line of the pattern becomes a straight line, centered with the marks of the CRT.**

### IMPORTANT NOTICE

**Rings come along with deflection yoke in one piece.**

**Vertical raster shift adjustment**



## INITIAL CENTER STATIC CONVERGENCE

**Connect a dot/cross hatch generator to the receiver and tune in a signal. Observe misconvergence at center of the screen only.**

**Adjust the R&B pole magnets; by separating tabs and rotating to converge blue with red.**

**Adjust the R&B and R&B&G pole magnets: by separating tabs and rotating to converge blue and red (magenta) with green.**

**NOTE**

**Precise convergence at this point is not important.**

## PURITY ADJUSTMENT

**When the receiver is in the serviceman mode for making electronic adjustments, press the RECALL button on the remote control to enter purity check. (See the service adjustments electronic controls procedure).**

**Operate the receiver for 60 minutes using the first purity check field (white screen) to stabilize the CRT.**

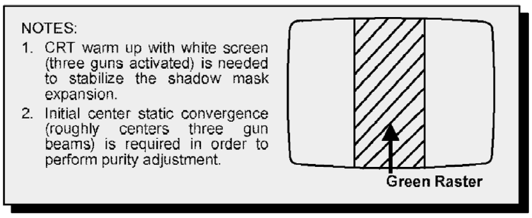
**Fully degauss the receiver by using an external degaussing coil.**

**Press the RECALL button on the remote control again until the purity check (green screen) appears.**

**Loosen the deflection yoke clamp screw and move the deflection yoke back as close to the purity magnet as possible.**

**Adjust the purity rings to set the vertical green raster precisely at the center of the screen.**

**Green raster adjustment**



NOTES:

1. CRT warm up with white screen (three guns activated) is needed to stabilize the shadow mask expansion.
2. Initial center static convergence (roughly centers three gun beams) is required in order to perform purity adjustment.

**Slowly move the deflection yoke forward until the best overall green screen is displayed.**

**Tighten the deflection yoke clamp screw.**

**Press the RECALL button on the remote control again until the purity check blue and red screens appear and observe that good purity is obtained on each respective field.**

**Press the RECALL button on the remote control again until purity check (white screen) appears.**

**Observe the screen for uniform white. If purity has not been achieved, repeat the above**

**procedure.**

## FINAL CONVERGENCE PROCEDURE

**NOTE**

**Vertical size and focus adjustments must be completed prior to performing the convergence adjustment. Connect a dot pattern generator to the receiver. The brightness level should not be higher than necessary to obtain a clear pattern.**

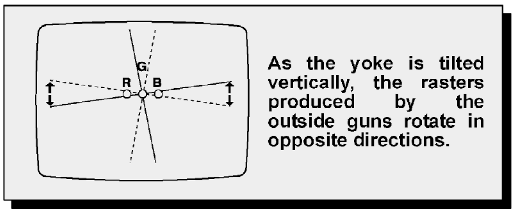
**Converge the red and the blue dots at the center of the screen by rotating the R&B pole static convergence magnets.**
**Align the converged red/blue dots with the green dots at the center of the screen by rotating the R&B&G pole static convergence magnets. Melt wax with soldering iron to reseal the magnets.**
**Slightly tilt vertically and horizontally (do not rotate) the deflection yoke to obtain a good overall convergence.**
**If convergence is not reached at the edges, insert permalloy in the DY corners to achieve proper convergence. Recheck for purity and readjust if necessary.**
**After vertical adjustment of the yoke, insert wedge at 11 o’clock position, then make the horizontal tilt adjustment.**
**Secure the deflection yoke by inserting four side wedges.**
**Apply adhesive between tab (thin portion) of wedge and CRT and place tape over the tab to secure to the CRT.**

## 11.1. Permalloy convergence corrector strip (Part No. 0FMK014ZZ)

**This strip is used in some sets to match the yoke and CRT for optimum convergence. If the yoke or CRT is replaced, the strip may not be required.**
**First converge the set without the strip and observe the corners.**
**First converge the set without the strip and observe the corners.**
**If correction is needed:**

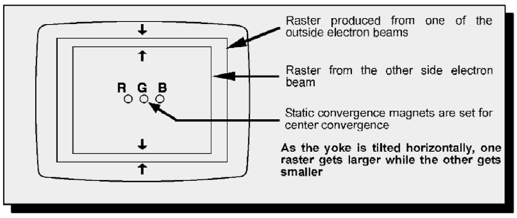
1. **Place strip between CRT and yoke, in quadrant needing correction. Slowly move it around for desired results.**
2. **Press adhesive tightly to the CRT and secure with tape.**

**Vertical Yoke Movement**

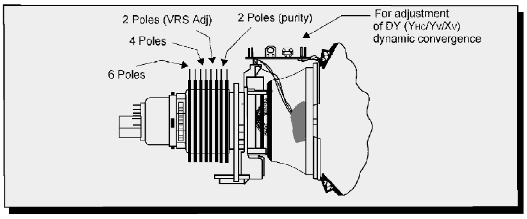


As the yoke is tilted vertically, the rasters produced by the outside guns rotate in opposite directions.

**Horizontal Yoke Movement**


R G B
Raster produced from one of the outside electron beams
Raster from the other side electron beam
Static convergence magnets are set for center convergence
As the yoke is tilted horizontally, one raster gets larger while the other gets smaller

**Convergence Magnets and Wedges Location**


2 Poles (VRS Adj)
2 Poles (purity)
For adjustment of DY ($Y_{HC}/Y_V/X_V$) dynamic convergence
4 Poles
6 Poles

# 12. Service mode (electronic adjustments)

**This receiver has electronic technology using the IC bus concept. It performs as a control function and it replaces many mechanical controls. Instead of adjusting mechanical controls individually, many of the control functions are now performedby using “on screen display menu”. (The service adjustment mode).**

**NOTE**

**It is suggested that the technician reads all the way through and understand the following procedure for entering/exiting the service adjustment mode; then proceed with the instructions working with the receiver. When becoming familiarwith the procedure, the flow chart for service mode may be used as a quick guide.**

### Quick entry to service mode

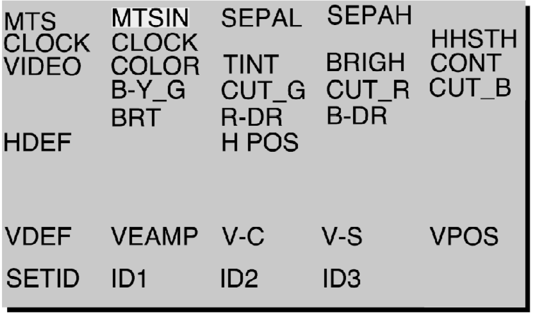
**When minor adjustments need to be done to the electronic controls, the method of entering the service mode without removal of the cabinet back is as follows using the remote control:**

1. **Select SET-UP icon and select CABLE mode.**
2. **Select TIMER icon and set SLEEP time for 30 Min.**
3. **Press “ACTION” twice to exit menus.**
4. **Tune to the channel 124.**
5. **Adjust VOLUME to minimum (0).**
6. **Press VOL → (decrease) on receiver. Red “CHK” appears in upper corner.**

### To toggle between aging and service modes:

**While the “CHK” is displayed on the left top corner of the CRT, pressing “ACTION” and “VOL” UP on the TV simultaneously will toggle between the modes. Red “CHK” for serviceand yellow “CHK” for aging.**

## 7. Press POWER on the remote control to display the service adjustment modes menu, select adjustment by pressing the volume right/left buttons and channel up/down buttons on the remote and ACTION to enter the adjustment.



| | | | | |
|---|---|---|---|---|
| MTS | MTSIN | SEPAL | SEPAH | |
| CLOCK | CLOCK | | | HHSTH |
| VIDEO | COLOR | TINT | BRIGH | CONT |
| | B-Y_G | CUT_G | CUT_R | CUT_B |
| | BRT | R-DR | B-DR | |
| HDEF | | H POS | | |
| VDEF | VEAMP | V-C | V-S | VPOS |
| SETID | ID1 | ID2 | ID3 | |

### Exiting the service mode:

**This TV goes out from service mode when it is unplugged or turned OFF. To exit the service mode, turn the TV OFF from or unplug the TV from A.C.**

### Other method

**Press ACTION and POWER on the receiver simultaneously for at least 2 seconds.**
**The receiver momentarily shuts off; then comes back on tuned to channel 3 with a preset level of sound.**
**Any programmed channels, channels caption data and some others user defined settings will be erased when exited by pressing ACTION and POWER on receiver.**

**IMPORTANT NOTE**
**Always check that the TV exits the service mode.**

### To confirm colors

**When in service mode (red “CHK” is displayed) press RECALL on the remote control to enter the purity field check mode**

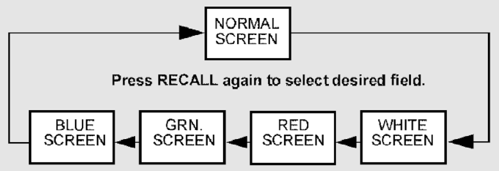


Figure 1. Purity check field mode.

### Entering service mode (open-back method)

**While the receiver is connected and operating in normal mode, momentarily short test point FA1 (TP1 pin 2) to cold ground (TP1 pin 3).**
**The receiver enters the aging mode.**
**Yellow letters “CHK” appear in the upper left corner of the screen. / (The volume right/left and channel up/down will adjust rapidly).**

**Note:**

**If service mode is accessed by this method be sure to reset the set after service is performed.**

## 12.1. Service adjustment default values for items

| NAME | DESCRIPTION | ADDRESS | REGISTER VALUE | | |
|---|---|---|---|---|---|
| | | | CT-20G8G/SG | CT-20L8G | CT-25L8 UG |
| MTSIN | MTS INPUT LEVEL | A4 01 | 25 | 25 | 25 |
| SEPAL | MTS LOW LEVEL SEPARATION | A4 02 | 08 | 08 | 08 |
| SEPAH | MTS HIGH LEVEL SEPARATION | A4 03 | 1D | 1D | 1D |
| CLOCK | CLOCK | A4 04 | 128 | 128 | 128 |
| HHSTH | HHS VOLTAGE LEVEL REFERENCE | A4 05 | 9D | 9D | 89 |
| COLOR | COLOR | A4 06 | 01 15 | 01 15 | 01 15 |
| TINT | TINT | A4 08 | 56 | 56 | 56 |
| BRIGH | SUB-BRIGHTNESS | A4 09 | 4E | 4E | 40 |
| CONT | SUB-CONTRAST | A4 0A | 38 | 38 | 60 |
| B-Y_G | MAGENTA TINT ADJ | A4 0B | 80 | 80 | 80 |
| CUT_G | GREEN CUT-OFF | A4 0C | 01 C3 | 01 C3 | 02 05 |
| CUT_R | RED CUT-OFF | A4 0E | 02 0E | 02 0E | 02 9B |
| CUT_B | BLUE CUT-OFF | A4 10 | 01 5B | 01 5B | 01 F4 |
| BRT | BRIGHT | A4 12 | 4E | 4E | 40 |
| R-DR | RED DRIVE | A4 13 | 09 00 | 09 00 | 08 86 |
| B-DR | BLUE DRIVE | A4 15 | 09 00 | 09 00 | 07 ED |
| H-POS | HORIZONTAL POSITION | A4 18 | 82 | 82 | 73 |
| VEAMP | VERTICAL SIZE | A4 29 | 9B | 9B | 9C |
| V-C | VERTICAL LINEARITY | A4 2A | 4C | 4C | 4C |
| V-S | VERTICAL SIZE CORRECTION | A4 2B | 00 | 00 | 00 |
| VPOS | VERTICAL POSITION | A4 FF | 7C | 7C | 77 |
| ID1* | ID SWITCH 1 | A4 E9 | 88 | 70 | 70 |
| ID2* | ID SWITCH 2 | A4 EA | 06 | 06 | 06 |
| ID3* | ID SWITCH 3 | A4 EB | 30 | 30 | 30 |

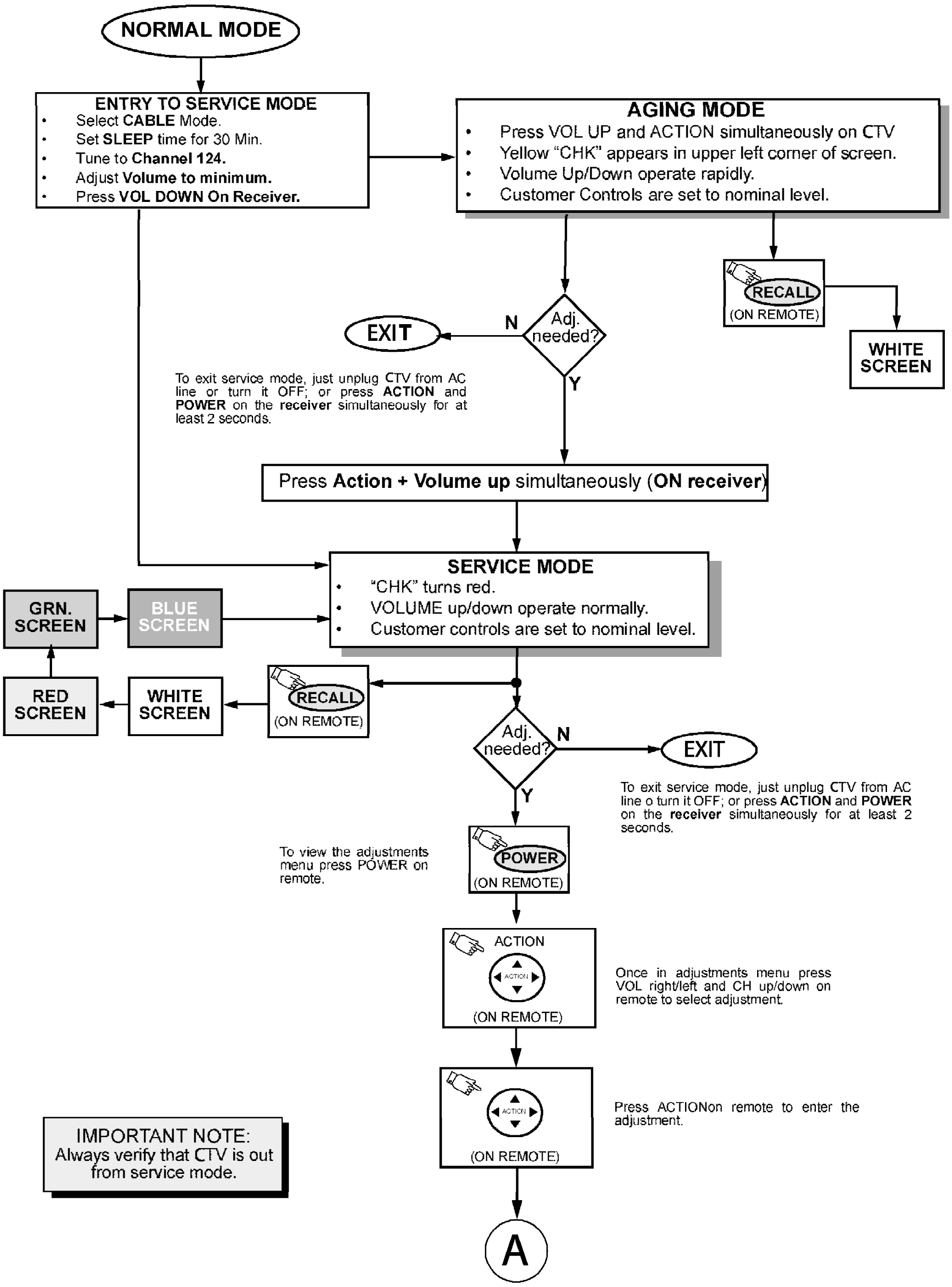
**IMPORTANT:**

**These table values are approximated and could change due to variation of electrical characteristics in each set, except for the ID switch values.**

***Note:**

**The correspondent ID switch (ID1,ID2, ID3) data configuration should not be modified in any way. If EEPROM circuit needs to be replaced, these ID values should be configured according with this table.**

## 12.2. Instructional Flow Chart for Service Mode


NORMAL MODE
ENTRY TO SERVICE MODE
Select CABLE Mode.
Set SLEEP time for 30 Min.
Tune to Channel 124.
Adjust Volume to minimum.
Press VOL DOWN On Receiver.
AGING MODE
Press VOL UP and ACTION simultaneously on CTV
Yellow "CHK" appears in upper left corner of screen.
Volume Up/Down operate rapidly.
Customer Controls are set to nominal level.
RECALL
(ON REMOTE)
WHITE SCREEN
EXIT
N
Adj. needed?
Y
Press Action + Volume up simultaneously (ON receiver)
SERVICE MODE
"CHK" turns red.
VOLUME up/down operate normally.
Customer controls are set to nominal level.
GRN. SCREEN
BLUE SCREEN
RED SCREEN
WHITE SCREEN
RECALL
(ON REMOTE)
Adj. needed?
N
EXIT
Y
POWER
(ON REMOTE)
ACTION
ACTION
(ON REMOTE)
ACTION
(ON REMOTE)
A

To exit service mode, just unplug CTV from AC line or turn it OFF; or press **ACTION** and **POWER** on the **receiver** simultaneously for at least 2 seconds.

To exit service mode, just unplug CTV from AC line o turn it OFF; or press **ACTION** and **POWER** on the **receiver** simultaneously for at least 2 seconds.

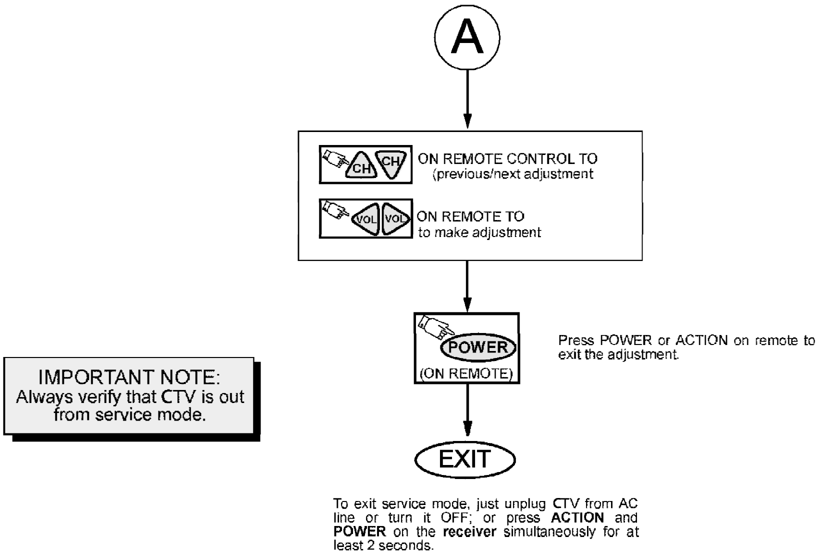
To view the adjustments menu press POWER on remote.

Once in adjustments menu press VOL right/left and CH up/down on remote to select adjustment.

Press ACTIONon remote to enter the adjustment.

IMPORTANT NOTE:
Always verify that CTV is out from service mode.

## 12.3. Instructional flow chart for service mode (continued).



Press POWER or ACTION on remote to exit the adjustment.

IMPORTANT NOTE:
Always verify that CTV is out from service mode.

To exit service mode, just unplug CTV from AC line or turn it OFF; or press **ACTION** and **POWER** on the **receiver** simultaneously for at least 2 seconds.

# 13. Service adjustments (electronic controls)

**NOTE**
**Please correlate with available pattern on all adjustments**

## 13.1. Sub-Brightness and Contrast / Service DAC adjustment (BRIGH, CONT)

**Adjustment of this control is important for setting proper operation of customer brightness and picture controls. Do not adjust the SCREEN VR after the sub-brightness is set.**
**This adjustment is factory set. Do not adjust unless repairs are made to associated circuit, the CRT Board or when the CRT is replaced.**

**Preparation**

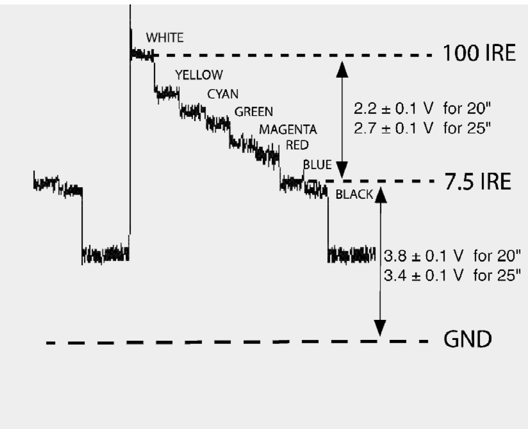
1. **Apply a colorbar pattern.**
2. **Set the PICTURE control to the maximum.**
3. **Set COLOR control to minimum (no color on picture).**
4. **Set the BRIGHTNESS control to the center.**
5. **Set the SHARPNESS control to the center.**
6. **Connect the oscilloscope to TP35.**

**Procedure**

1. **In the service mode, select DAC for brightness adjustment**

**“BRIGH”, and adjust data to obtain 3.8±0.1V (for 20” CRT) or 3.4± 0.1V (for 25” CRT) between 7.5IRE and GND level at TP35. (See waveformdetail).**

2. **In service mode, select DAC for contrast adjustment “CONT”, and adjust data to obtain 2.2±0.1V (for 20” CRT) or 2.7±0.1V (for 25” CRT) between 7.5IRE and 100IRE level at TP35. (See waveform detail)**



## 13.2. Color output adjustment / Service DAC adjustment (COLOR, TINT)

**NOTE**

**if a rainbow pattern generator is available perform the following procedure; the next section describes the procedure with no rainbow pattern.**

**Make sure that sub-contrast adjustment was finished prior to perform this adjustment.**

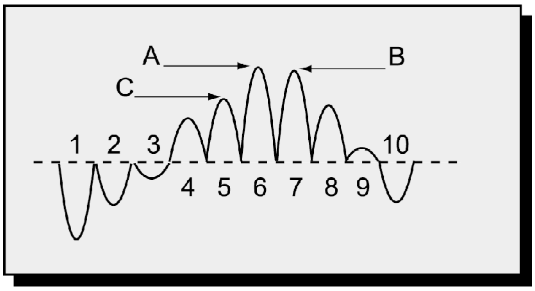
**PREPARATION**

1. **Normalize the picture settings.**
2. **Set the BRIGHTNESS control to minimum.**
3. **Set the COLOR control to the center.**
4. **Set the TINT control to the center.**
5. **Set the PICTURE control to the maximum.**
6. **Set the SHARPNESS control to the minimum.**

**PROCEDURE**

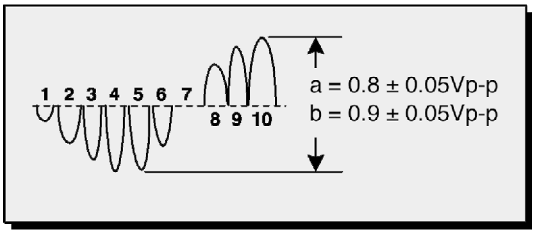
1. **Apply a rainbow color bar pattern.**
2. **Connect the oscilloscope to TP37.**
3. **In service mode adjust “TINT” register until the waveform measured is as the one shown. Tint level from A and B peaks must be almost in the same level (0.3 Vp for 20” models and 0.35 Vp for 25” models).**

**TP37 Waveform.**



4. **Connect the oscilloscope to TP35 and GND.**
5. **Adjust “COLOR” register so that the amplitude “a” is 0.8±0.05Vp-p for 20” models and amplitude “b” 0.9±0.05Vp-p for 25” models.**

**TP35 Waveform.**



## 13.3. Color output adjustment / Service DAC adjustment / (COLOR, TINT, B-Y_G)

**NOTE**

**Color and tint adjustment sets the reference settings for the user controls; It is important to read the procedures.**

**(NO RAINBOW PATTERN)**

**Make sure that sub-contrast adjustment was finished prior to perform this adjustment**

**PREPARATION**

**Normalize the picture settings.**

**PROCEDURE**

1. Apply a color bar pattern.
2. In service mode adjust “R DR” and “B DR” data to “80”.
3. In service mode adjust “TINT” data so that the color does not become greenish or redish.
4. In service mode adjust “COLOR” data so that the color level is not too high (saturated) or too low (tending to black and white).
5. In service mode adjust “B-Y G” data so that blue and green seem natural.
6. Confirm that saturation and picture are normal (normal image).
7. If image is not satisfactory, repeat adjustment until the image is normal and natural.

**NOTE**
The image can be compared against other set to see the image quality.

## 13.4. Color temperature adjustment / (B/W Tracking) / Service DAC Adjust. / (CUT R) (CUT G) (CUT B) (R DR) (B DR)

**Minor Touch-Up Method**
OBSERVE low and high brightness areas of a B/W picture for proper tracking. Adjust only as required for “good gray scale and warm highlights”.

1. LOW LIGHT areas - In service mode for making electronic adjustments, select CUT R, CUT G, CUT B and adjust the picture for gray.
2. HIGH LIGHT areas - In service mode for making electronic adjustments, select drive R DR, B DR and adjust the picture for warm whites.

**Complete adjustment**

**PREPARATION**

1. Turn the receiver “ON” and allow 30 minutes warm up at WHITE

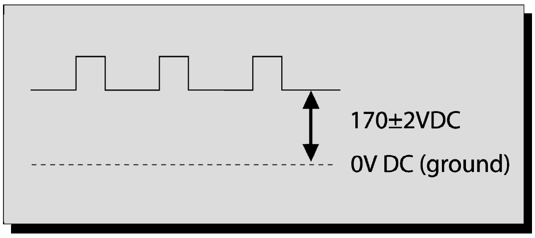
PATTERN.

2. Apply a color bar pattern (with no color).
3. Turn the SCREEN control (part of FBT T551) fully counterclockwise.
4. Preset the following service DACs for best results:

   - BRIGH______________________1 D0
   - CUT R______________________02 00
   - CUT G______________________02 00
   - CUT B______________________02 00
   - R DR________________________07 FF
   - B DR________________________07 FF

PROCEDURE

1. Connect the oscilloscope to KG (CRT-Board).
2. In service mode for making electronic adjustment, select “BRIGH” DAC.
3. Press RECALL button on the remote control to collapse the raster. (service SW).
4. Connect oscilloscope to KG on C-Board and adjust service mode “CUT-G” DAC until 170±2V above DC ground is measured
5. Remove the probe from KG.
6. Turn screen clockwise slowly until color is slightly appeared.
7. Then adjust “CUT R” and “CUT B” until line becomes white.
8. Press RECALL button on the remote to restore the raster.
9. Adjust “R DR” and “B DR” so the white seems like white and black like black.
10. Apply a normal signal and confirm that the image is normal and a good gray scale
11. If correction is needed perform minor touch-up method.



## 13.5. Deflection adjustments

### To reset deflection adjustments

**To reset deflection adjustments to factory adjusted default, enter to service mode (with red CHK displayed), press POWER button on remote to display the service menu, then press and hold RECALL button for at least three seconds, a reset messagewill appear in the image.**
**Use this feature when deflection adjustment gets off adjustment to the point that it cannot be adjusted back easily.**

### 13.5.1. H-Center adjustment

PREPARATION

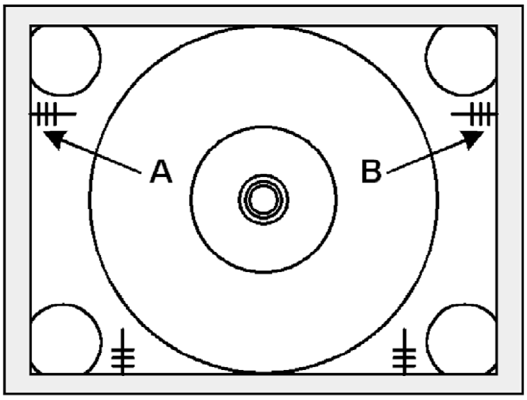
**1. Apply a crosshatch pattern.**

**2. Normalize the picture settings.**

PROCEDURE

**1. Apply a monoscope pattern to center the picture.**

**Horizontal Center Adjustment**



**2. If the horizontal center is not aligned, in service mode adjust "H POS" DATA to adjust the horizontal center of the monoscope pattern to the CRT center.**

3. Verify that horizontal width (A & B mark) is within 4.5 ± 0.7 for 20” models and 5.0 ± 0.7 for 25” models.

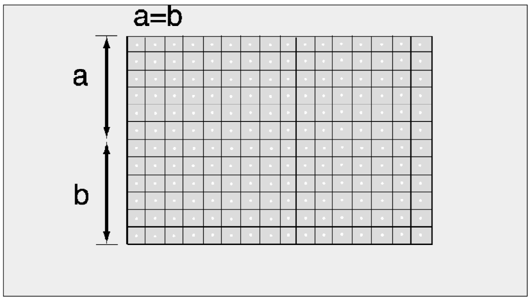
### 13.5.2. Vertical linearity(V-C), V-Size and V-Position adjustment

PREPARATION

1. Apply a crosshatch pattern
2. Normalize the picture settings.

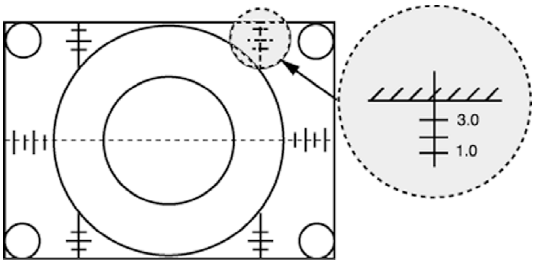
PROCEDURE

1. Enter service mode, select DAC adjustment / “V-POS” and adjust monoscope pattern to the center vertical position of the CRT center mark.
2. Adjust linearity data “V-C” so that interval of “a” is same as “b” (a =b).



3. If the v-position is not at the CRT center, adjust / V position “V POS” DATA again.
4. Apply a monoscope pattern.
5. Confirm that center horizontal line is in center mark on CRT.
6. Adjust “VEAMP” register for correct vertical size by making monoscope round circle leaving 4 marks off the CRT edge.

Vertical centering adjustment.



### 13.5.3. V-S Correction adjustment

PREPARATION

1. Apply a crosshatch pattern
2. Normalize the picture settings.

PROCEDURE

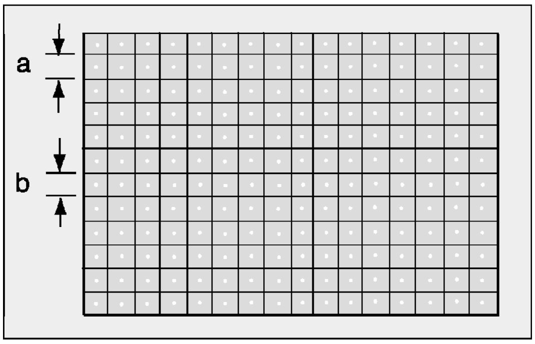
1. Enter to service mode
2. Check a and b sizes, If b-a < -1.5mm (in top & bottom extending case)

   - Increase “V-S” DATA by one step

NOTE
Repeat “a” and “b” until b-a ± 1.5mm

3. Confirm to make outermost circle of monoscope pattern a correct circle

V-Adjustment



## 13.6. MTS circuit adjustments

The MTS circuit adjustments require two steps:

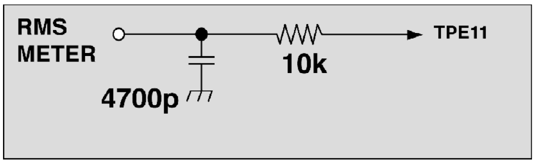
1. Input level adjustment.
2. Stereo separation adjustment.

### Input level adjustment / Service DAC adjustment (MTSIN)

**PREPARATION**

**1. Connect an RMS meter with filter jig as shown in figure to TPE11.**

**Filter Jig**



**2. Connect an RF signal generator to the RF antenna input.**

**PROCEDURE**

**1. Apply the following signal from the RF signal generator:**

- **Video: 100 IRE flat field, 30% modulation.**
- **Audio: 300Hz, 100% modulation, monaural (70 ±5dB, 75 Ω OPEN, P/S 10dB). Make sure that the 75 μ s pre-emphasis is OFF.**

**2. Adjust the MTS input level adjustment “MTSIN” data until the RMS voltage measured is 106 ± 6.0mVrms.**

### Stereo separation adjustment (SEPAH)

**PREPARATION**

**1. Connect an R.F. signal generator to the RF antenna input.**

**2. Connect a scope to TPA20.**

**PROCEDURE**

**1. Select stereo mode in audio menu**

**2. Apply the following signal from the RF signal generator:**

- **Video: 100 IRE flat field, 30% modulation.**

- **Audio: 300Hz, 30% modulation, stereo (left only) (70±5dB, 75 Ω OPEN, P/S 10dB).**

**NOTE**
**After setting 30% modulation with P.L. SW and N.R. SW OFF, turn P.L. SW and N.R. SW ON.**

3. **In service mode, adjust the MTS Low-Level separation adjustment “SEPAL” data until the amplitude displayed on the scope is minimum.**
4. **Apply the following signal from the RF signal generator:**

   - **Video: 100 IRE flat field, 30% modulation**
   - **Audio: 3KHz, 30% modulation, stereo (left only) (70 ±5dB, 75 Ω OPEN, P/S 10dB).**

   **NOTE**
   **After setting 30% modulation with P.L. SW and N.R. SW OFF, turn P.L. SW and N.R. SW ON.**

5. **Adjust the MTS High-level separation adjustment “SEPAH” until the amplitude displayed on the scope is minimum.**
6. **Repeat above steps 2 through 5 until the amplitude is at minimum for both signals.**

## 13.7. Clock adjustment (CLOCK)

**PREPARATION**
**Connect the frequency counter from TP017 / (IC001 pin 79) to cold ground**

**PROCEDURE**

1. **Turn the receiver “OFF” with the A.C. power applied.**
2. **Measure TP017 (IC001 pin 79) for the frequency of the waveform and record the reading.**

**NOTE**

3. **TP017 (IC001 pin 79) measurement must have at least four digits of resolution following the decimal point. Example: 000.0000**
4. **Place the receiver into service mode for making electronic adjustment, select the clock adjustment DAC “CLOCK”.**
5. **Calculate and set “CLOCK” based on the following formula:**

$$\text{CLOCK} = 128 - \left[ \frac{(\text{TP017}_{freq} - 610.35)}{610.35} \times 450000 \right]$$

**NOTE**
**TP017 (IC001 pin 79) measurement will not change regardless of the value stored in CLOCK.**

## 13.8. Service Adjustments Mechanical Controls

### WIDTH CORRECTION ADJUSTMENT

**Note**
**Perform this adjustment only when FBT is changed.**

### FOCUS (PART OF T551)

**Preparation**
**Apply a crosshatch pattern with dots.**

**Procedure**

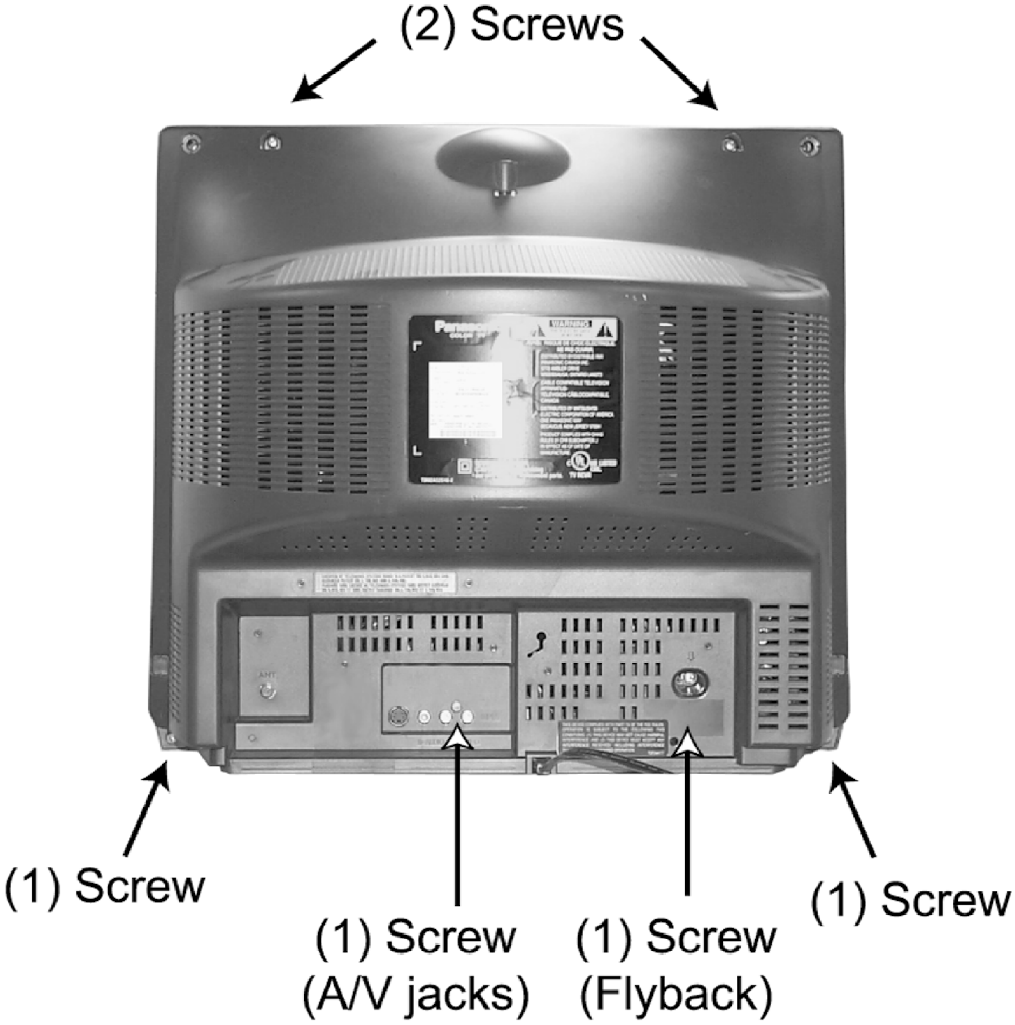
1. **Adjust the FOCUS VR to obtain the sharpest and clearest dot pattern.**

    **- Adjust for best center.**
    **- Adjust for best area between the center and top right corner.**

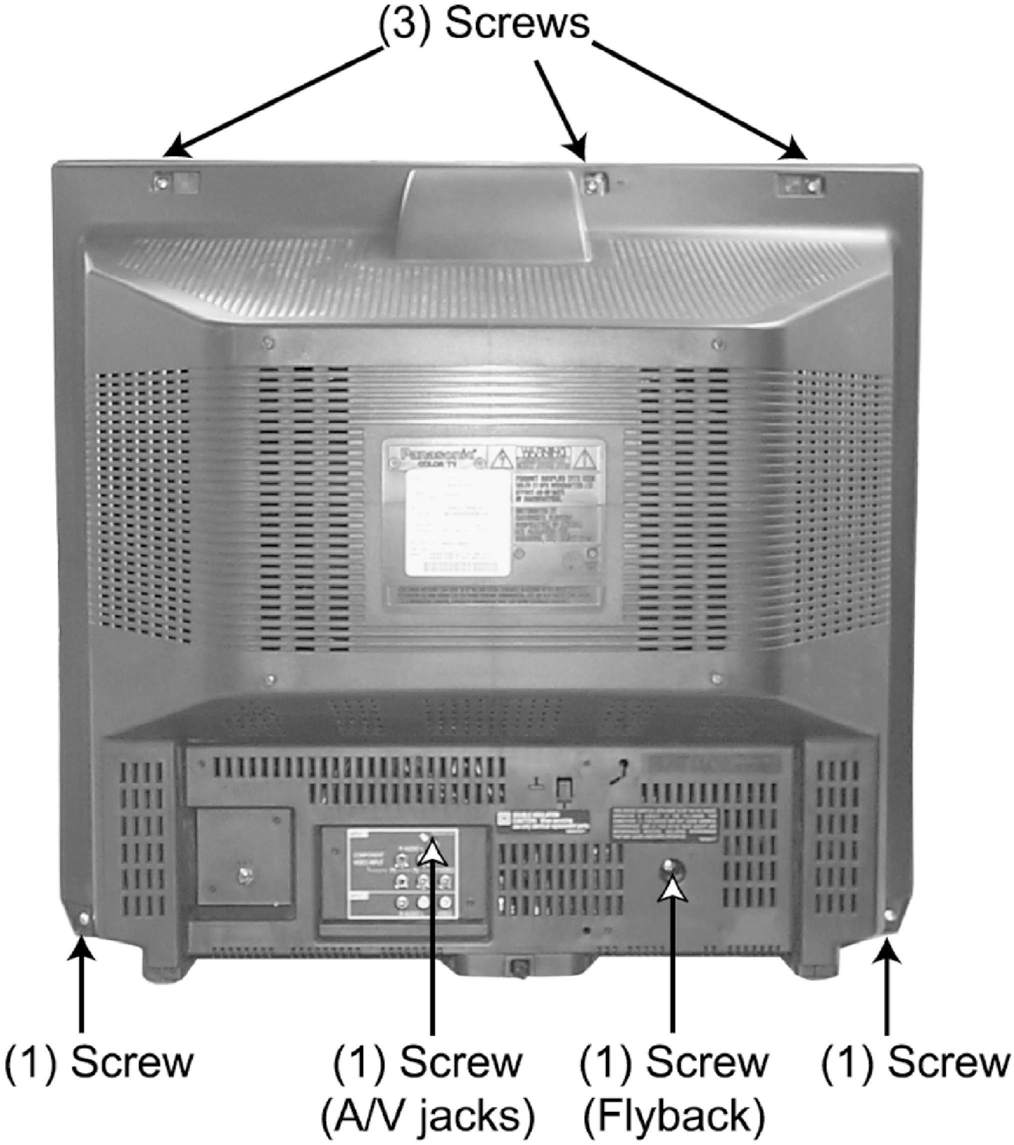
# 14. Identification of Components

## 14.1. Back Cover Removal

**Back Cover Removal (CT-20G8G/CT-20G8SG/CT-20L8G).**

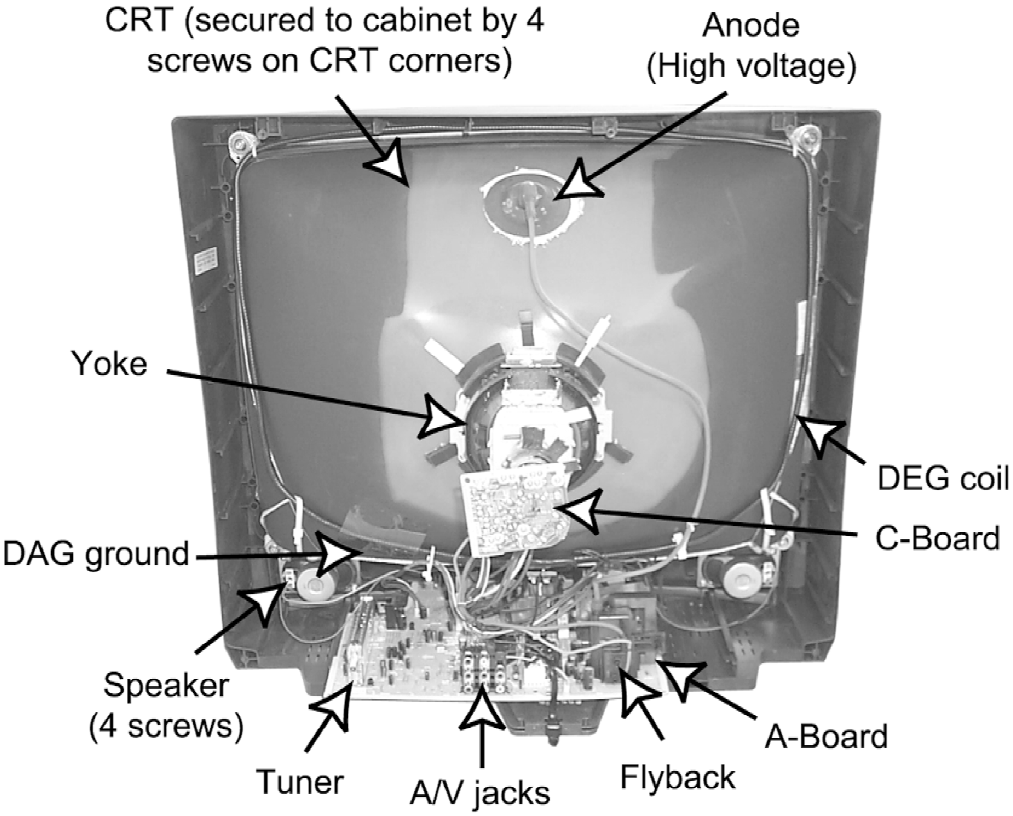

(2) Screws
(1) Screw
(1) Screw
(1) Screw
(A/V jacks)
(1) Screw
(Flyback)

**Back Cover Removal (CT-25L8G/CT-25L8UG).**


(3) Screws
(1) Screw
(1) Screw
(A/V jacks)
(1) Screw
(Flyback)
(1) Screw

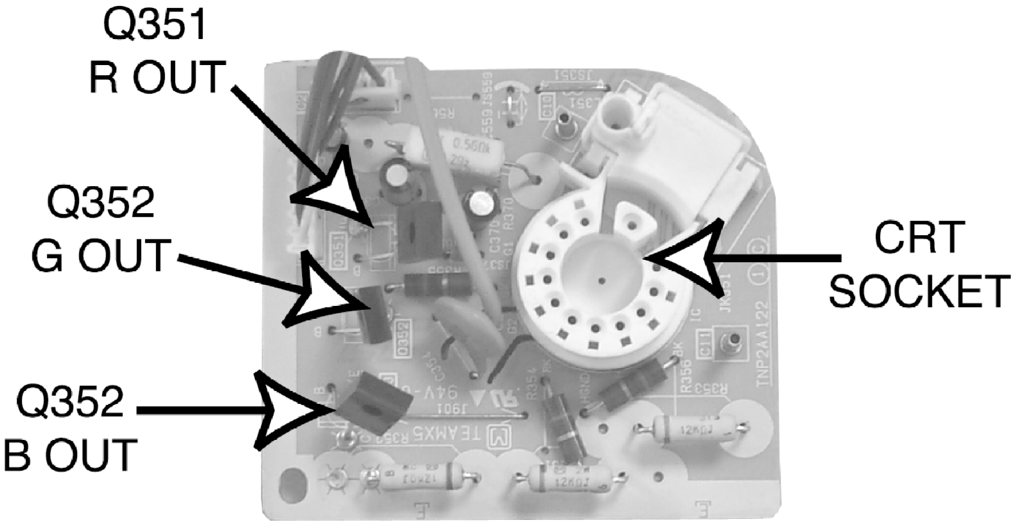
## 14.2. Chassis Components

**Rear view (inside cabinet).**


CRT (secured to cabinet by 4 screws on CRT corners)
Anode (High voltage)
Yoke
DEG coil
C-Board
DAG ground
Speaker (4 screws)
Tuner
A/V jacks
Flyback
A-Board

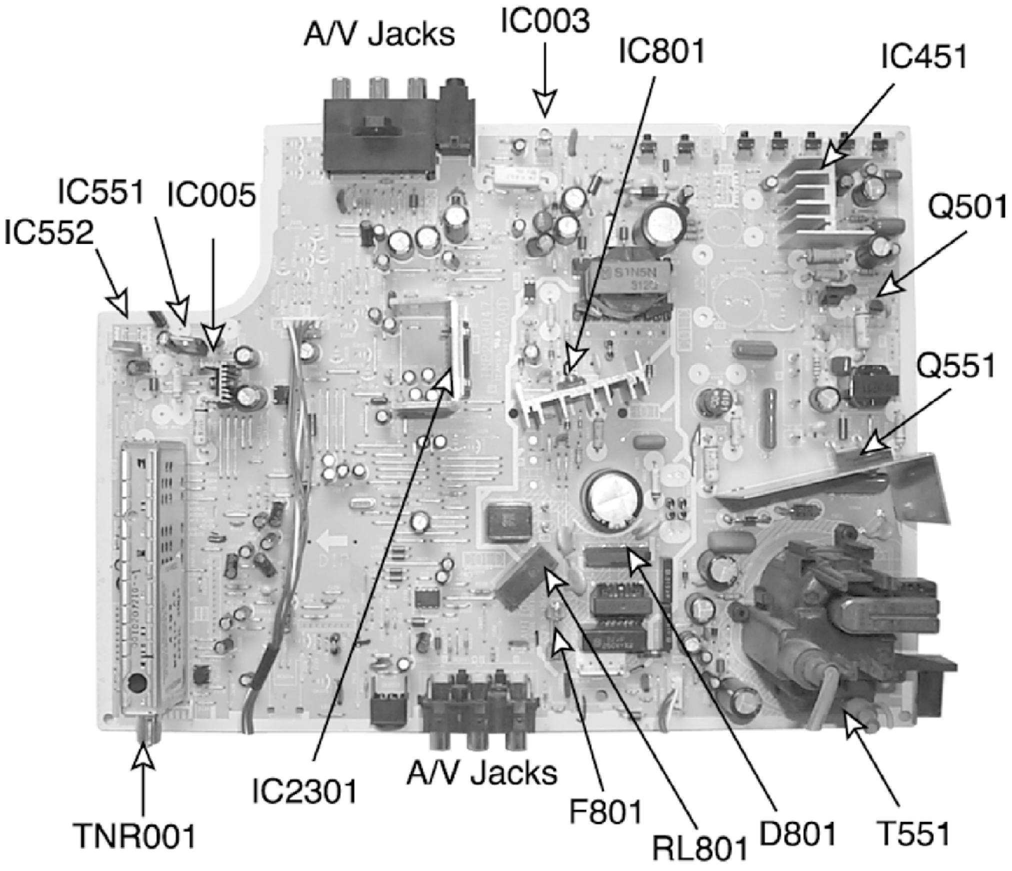
## 14.2.1. C-Board Chassis

C-Board component locations


Q351
R OUT
Q352
G OUT
Q352
B OUT
CRT
SOCKET

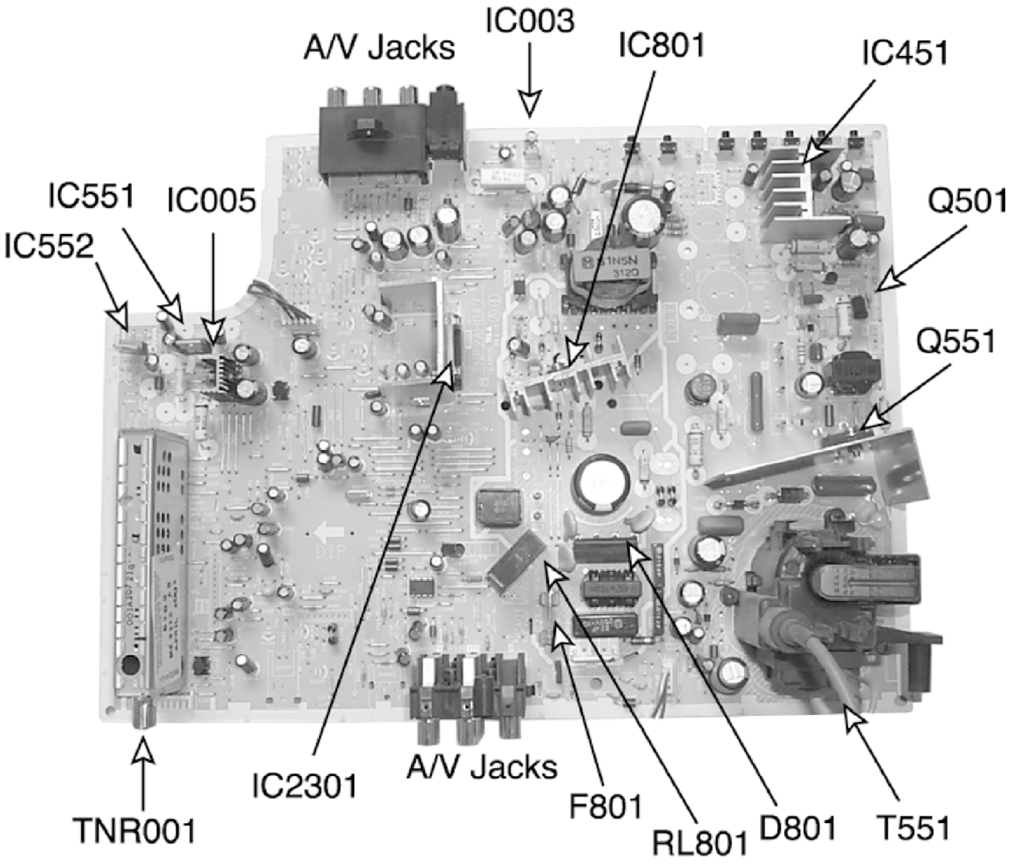
## 14.2.2. CT-20G8G/CT-20G8SG A-Board Chassis

A-Board Top view (CT-20G8G/CT-20G8SG).


A/V Jacks
IC003
IC801
IC451
IC551
IC005
IC552
Q501
Q551
TNR001
IC2301
A/V Jacks
F801
RL801
D801
T551

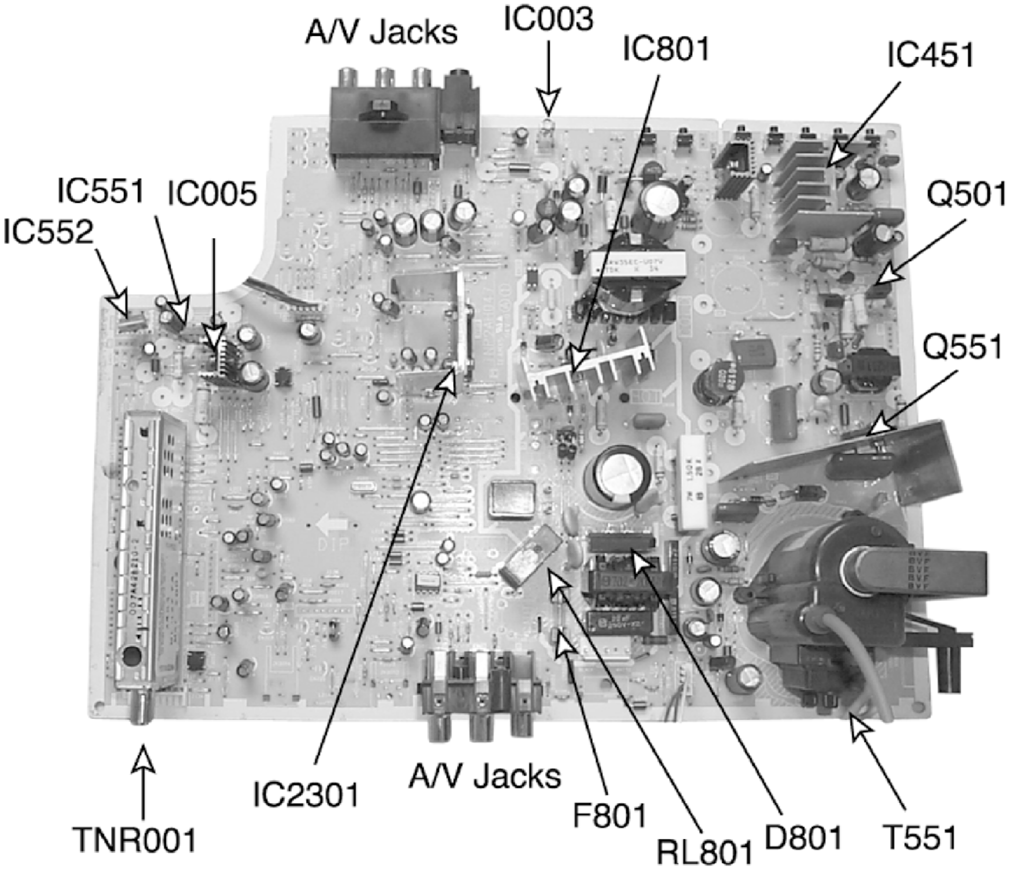
### 14.2.3. CT-20L8 A-Board Chassis

**A-Board Top view (CT-20L8G)**


A/V Jacks
IC003
IC801
IC451
IC551
IC005
IC552
Q501
Q551
TNR001
IC2301
A/V Jacks
F801
RL801
D801
T551

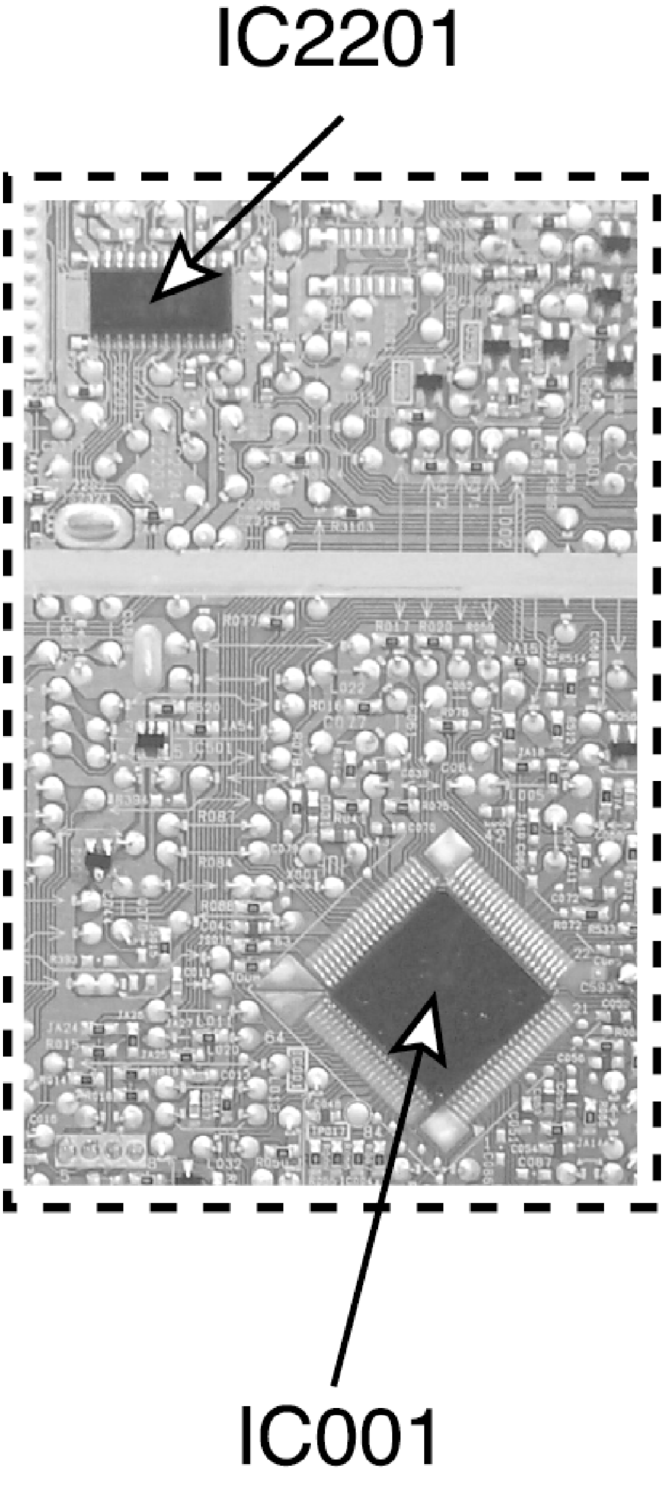
### 14.2.4. CT-25L8/CT-25L8U A-Board Chassis

**A-Board Top view (CT-25L8G/CT-25L8UG).**


A/V Jacks
IC003
IC801
IC451
IC551
IC005
IC552
Q501
Q551
TNR001
IC2301
A/V Jacks
F801
RL801
D801
T551

## 14.2.5. A-Board Surface-mounted components

**A-Board (bottom view)**


IC2201
IC001

## 15. Reference for PDF Colors

| DESCRIPTION OF PDF LINK COLORS | |
|---|---|
| **TYPE** | **DESTINATION** |
| **SCHEMATIC** | |
| YELLOW ON IC | IC ON PCB |
| YELLOW ON CONNECTOR | CONNECTOR ON PCB |
| YELLOW ON SCHEMATIC | PCB |
| CYAN | WAVEFORM |
| GREEN ON SIDE | SCHEMATIC CONTINUED |
| GREEN ON CONNECTOR | CONNECTOR CONNECTION |
| BLUE ON IC | VOLTAGE |
| **PCB** | |
| BLUE ON IC | IC ON SCHEMATIC |
| BLUE ON CONNECTOR | CONNECTOR ON SCHEMATIC |
| BLUE ON PCB | SCHEMATIC |
| GREEN ON SIDE | PCB CONTINUED |
| **BLOCK DIAGRAMS** | |
| GREEN ON IC | IC ON SCHEMATIC |
| GREEN ON SIDE | BLOCK DIAGRAM CONTINUED |

# 16. Conductor Views

## 16.1. A-Board Printed Circuit (Left Side)

## 16.2. A-Board& C Board Printed Circuit (Right Side)

# 17. Block Diagrams

## 17.1. Video Signal Block Diagram

## 17.2. Audio Signal Block Diagram

# 18. Schematics

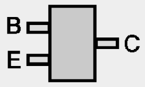
## 18.1. English Schematic Notes

# Notes:

## IMPORTANT SAFETY NOTICE

THIS SCHEMATIC DIAGRAM INCORPORATES SPECIAL FEATURES THAT ARE IMPORTANT FOR PROTECTION FROM X-RADIATION, FIRE AND ELECTRICAL SHOCK HAZARDS. WHEN SERVICING IT IS ESSENTIAL THAT ONLY MANUFACTURERS SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS DESIGNATED WITH A ⚠ IN THE SCHEMATIC.

## CHIP TRANSISTOR LEAD DESIGNATION



## SCHEMATIC NOTES

1. Resistors are carbon 1/4W unless noted otherwise.
2. Capacitors are ceramic 50V unless noted otherwise.
3. Coil value notes is inductance in µH.
4. Test point indicated by ╿; Test point but no pin ╿.
5. Components indicated with ⚠ are critical parts and replacement should be made with manufacture specified replacement parts only.
6. ▬ (**BOLD LINE**) indicates the route of B+ supply.
7. The schematic diagrams are current at the time of printing and are subject to change without notice.
8. Ground symbol ⏚ indicates **HOT GROUND CONNECTION**; ⏛ indicates COLD GROUND.

*NOTE: All other component symbols are used for engineering design purposes.*

## VOLTAGE MEASUREMENTS

1. Voltage measurement:
   - AC input to the Receiver is 120V. NTSC (HD, 1125i & 525P when applicable) signal generator is connected to the antenna of the Receiver. (Color bar pattern of 100 IRE white and 7.5 IRE black.)
   - All Picture and Audio adjustments are set to Normalize.
     TV ANT/CABLE - (Set-Up Menu) in TV/ANT Mode
     Volume - Min.
     TV/Video SW - TV position
     Audio Mode - Stereo
   - Voltage readings are nominal and may vary ±10% on active devices. Some voltage reading will vary with signal strength and picture content.
   - Supply voltages are nominal.
2. Ground symbol ⏚ indicates ground lead connection of meter.
   Incorrect ground connection will result in erroneous readings.

*CAUTION:* ***Incorrect ground connection of the test equipment will result in erroneous readings.***

## WAVEFORM MEASUREMENTS

1. ③ indicates waveform measurement. (Measurement can be taken at the best accessible location in common to the indicated point.)
2. Taken with an NTSC signal generator connected to the antenna terminal. (NTSC color bar pattern of 8 bars of EIA colors, 100 IRE white and 7.5 IRE black.)
3. Customer Controls (Picture/Audio Menu) are set to Normalize. Volume is set to "MIN".
4. All video and color waveforms are taken with a wideband scope and a probe with low capacitance (10 to 1). Shape and peak altitudes may vary depending on the type of Oscilloscope used and its settings.
5. Ground symbol ⏚ shown on waveform number indicates (Hot) ground lead connection of the Oscilloscope.

*CAUTION: Incorrect ground connection of the test equipment will result in erroneous readings.*

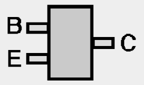
## 18.2. Notas de Esquemáticos en Español

# Notas

## NOTA DE SEGURIDAD

LOS DIAGRAMAS ELÉCTRICOS INCLUYEN CARACTERÍSTICAS ESPECIALES MUY IMPORTANTES PARA LA PROTECCIÓN CONTRA RAYOS-X, QUEMADURAS Y DESCARGAS ELÉCTRICAS. CUANDO SE DE SERVICIO ES IMPORTANTE USAR PARA REEMPLAZO DE COMPONENTES CRITICOS, SOLO PARTES ESPECIFICADAS POR EL FABRICANTES. LOS COMPONENTES CRITICOS ESTAN SEÑALADOS EN LOS DIAGRAMAS POR EL SIMBOLO ⚠.

**IDENTIFICACIÓN DE TERMINALES PARA TRANSISTORES EN *CHIP***



## NOTAS DE LOS DIAGRAMAS

1. Las Resistencias son de Carbón de 1/4W, a menos que se indique otra característica.
2. Los Capacitores son de Cerámica para 50V, a menos que se indique otra característica.
3. El valor indicado de las Bobinas es la inductancia expresada en µH.
4. Los puntos de prueba en la terminal de algún componente son indicados por ● Los puntos de prueba fuera de los componentes se indican con ○.
5. Los componentes señalados con el símbolo ⚠ son considerados componentes críticos y deben ser reemplazados sólo con las partes especificadas por el fabricante.
6. ▬ (**LINEA GRUESA**) indica las líneas de alimentación de los Voltajes B+.
7. Los diagramas eléctricos están sujetos a cambio sin previo aviso.
8. El símbolo ⏚ indica que es una conexión a **Tierra Caliente** y el símbolo ⊥ indica conexión a **Tierra Fría**.

***NOTA:* *Los demas símbolos de componentes incluidos son usados con fines de diseño.***

## MEDICIÓN DE VOLTAJES

1. Medición de voltaje:
   - El voltaje de entrada al Receptor es de 120V de Corriente Alterna. Un generador de patrones con formato NTSC se conecta a la entrada de la antena. (Patrón de Barras de Colores con 100 IREs para el Blanco y 7.5 IREs para el Negro.)
   - Los ajustes de los Menus Picture y Audio se normalizan.
     En el Menú Set-Up, en la opción ANTENA, se selecciona el modo de CABLE.
     El nivel de Volumen se minimiza.
     De los modos TV y Video, seleccionar el modo TV.
     Seleccionar modo Estereo del Audio.
   - Las mediciones de los voltajes son nominales y pueden variar hasta 10% en componentes en funcionamiento. Las lecturas de los voltajes pueden variar por la potencia de la señal y el contenido de la imagen.
   - Las fuentes de voltajes son nominales.
2. El símbolo ⏚ indica el tipo de tierra que se utiliza en la conexión del medidor.

***PRECAUCION: SI no se utiliza la conexión a la tierra adecuada, se obtendrán mediciones equivocadas y podría dañar el equipo de medición.***

## MEDICIÓN DE FORMAS DE ONDA

1. Un símbolo como ③ indica el punto para medir una señal. (La medición puede hacerse en el punto con mayor accesibilidad, siempre que sea común al indicado.)
2. Se midieron utilizando un generador con formato NTSC conectado a la terminal de la antena. (Patrón de 8 Barras de Colores EAI, formato NTSC de 100 IREs para el Blanco y 7.5 IREs para el Negro.)
3. Los ajustes de usuario de los Menus PICTURE y AUDIO se normalizaron. Posteriormente el nivel de volumen se ajusta al mínimo.
4. Las formas de onda de Video y Color fueron tomadas con un osciloscopio de banda alta y con un punta de prueba de baja capacitancia (10 a 1). La forma y amplitud de las ondas puede variar según el tipo de osciloscopio que se utilice y sus características.
5. El símbolo de tierra ⏚ que aparece junto al número de la forma de onda, indica que se utiliza conexión a **Tierra Caliente** en el extremo negativo de la punta de prueba.

***PRECAUCION: Si no se utiliza la conexión a la tierra adecuada, se obtendrán mediciones equivocadas y podría dañar el equipo de medición.***

### 18.3. A-Board Schematic TNP2AH047AA/AB (page 1 of 4)

### 18.4. A-Board Schematic TNP2AH047AA/AB (page 2 of 4)

### 18.5. A-Board Schematic TNP2AH047AA/AB (page 3 of 4)

### 18.6. A-Board Schematic TNP2AH047AA/AB (page 4 of 4)

### 18.7. A-Board Schematic TNP2AH047FA (page 1 of 4)

### 18.8. A-Board Schematic TNP2AH047FA(page 2 of 4)

### 18.9. A-Board Schematic TNP2AH047FA (page 3 of 4)

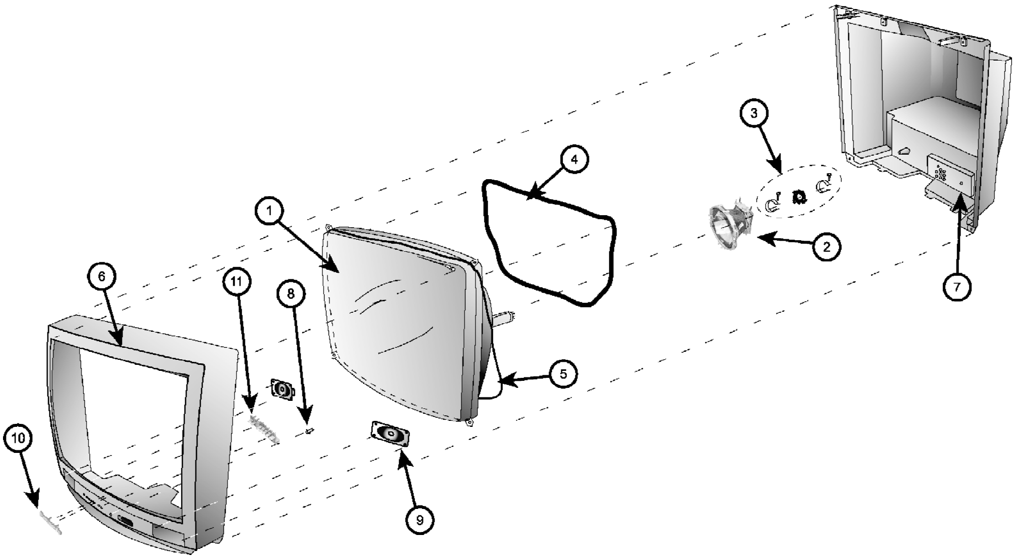
### 18.10. A-Board Schematic TNP2AH047FA (page 4 of 4)

### 18.11. C-Board Schematic TNP2AA122AA/FA

### 18.12. Voltages

### 18.13. Waveforms

## 19. Parts Location



## 20. Parts List

### 20.1. Parts List Notes

**Important Safety Notice**

Components identified by ⚠ mark have special characteristics important for safety.
When replacing any of these components, use manufacturer's specified parts.

### Abbreviation of part name and description

**1. Resistor**
Example :
ERD25TJ104 **C** 100KΩ, **J**, 1/4W
Type Allowance

| Type | Allowance |
|---|---|
| C : Carbon | F : ± 1% |
| F : Fuse | G : ± 2% |
| M : Metal Oxide Metal Film | J : ± 5%<br>K : ± 10% |
| S : Solid | M : ± 20% |
| W : Wire Wound | |

**2. Capacitor**
Example :
ECKF1H103ZF **C** 0.01µF, **Z**, 50V
Type Allowance

| Type | Allowance |
|---|---|
| C : Carbon | C : ± 0.25pF |
| E : Electrolytic | D : ± 0.5pF |
| P : Polyester Polypropylene | F : ± 1pF<br>G : ± 3% |
| T : Tantalum | J : ± 5% |
| | K : ± 10% |
| | L : ± 15% |
| | M : ± 20% |
| | P : ± 100%, -0% |
| | Z : ± 80%, -20% |

## 20.2. Parts List

| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| | | **CAPRISTORS** | |
| **CRA801** | **TP00842-51** | **TAPING GAP TERMINAL** | ⚠ |
| | | **CAPACITORS** | |
| **C003** | **ECA1HM4R7B** | **CAP E 4.7UF-50V** | |
| **C004** | **TCJ2VC1H150J** | **CAP C 15PF-J-50V** | |
| **C005** | **TCJ2VC1H150J** | **CAP C 15PF-J-50V** | |
| **C008** | **TCJ2VF1H103Z** | **CAP C .01UF-Z-50V** | |
| **C009** | **ECJ2VF1H104Z** | **CAP C .1UF-Z-50V** | |
| **C010** | **TCJ2VC1H680J** | **CAP C 68PF-J-50V** | |
| **C011** | **TCJ2VC1H680J** | **CAP C 68PF-J-50V** | |
| **C012** | **ECA1HM0R1B** | **CAP E 0.1UF/50V** | |
| **C013** | **TCJ2VC1H680J** | **CAP C 68PF-J-50V** | |
| **C016** | **ECA1AM101B** | **CAP E 100UF-10V** | |
| **C017** | **TCJ2VC1H680J** | **CAP C 68PF-J-50V** | |
| **C018** | **ECJ2VF1H103Z** | **CAP C .01UF-Z-50V / CT-20G8G CT-20G8SG CT-20L8G** | |
| **C018** | **TCJ2VF1H103Z** | **CAP C .01UF-Z-50V / CT-25L8G CT-25L8UG** | |
| **C019** | **ECA0JM102B** | **CAP E 1000UF-6.3V** | |
| **C020** | **ECA1CM102B** | **CAP E 1000UF/16V** | |
| **C021** | **TCJ2VF1H103Z** | **CAP C .01UF-Z-50V** | |
| **C031** | **TCJ2VC1H220J** | **CAP C 22PF-J-50V** | |
| **C032** | **ECA1AM470B** | **CAP E 47UF-10V** | |
| **C034** | **TCJ2VC1H390J** | **CAP C 39PF-J-50V** | |
| **C035** | **TCJ2VC1H120J** | **CAP C 12PF-J-50V** | |
| **C038** | **ECA1CM470B** | **CAP E 47UF/16V** | |

| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| C039 | TCJ2VB1H221K | CAP C 220PF-K-50V | |
| C041 | ECA1HM2R2B | CAP E 2.2UF-50V | |
| C043 | ECJ2VF1C105Z | CAP C 1.0UF-Z-16V | |
| C044 | ECA0JM102B | CAP E 1000UF-6.3V | |
| C046 | TCJ2VF1H103Z | CAP C .01UF-Z-50V | |
| C048 | ECJ2VF1C105Z | CAP C 1.0UF-Z-16V | |
| C051 | ECJ2VF1C105Z | CAP C 1.0UF-Z-16V | |
| C052 | ECA1CM101B | CAP E 100UF/16V | |
| C053 | ECJ2VF1C105Z | CAP C 1.0UF-Z-16V | |
| C054 | ECJ2VF1C105Z | CAP C 1.0UF-Z-16V | |
| C055 | ECJ2VF1C105Z | CAP C 1.0UF-Z-16V | |
| C056 | ECJ2VF1C105Z | CAP C 1.0UF-Z-16V | |
| C057 | ECEA1CN100UB | CAP E 10UF-16V | |
| C058 | ECEA1CN100UB | CAP E 10UF-16V | |
| C059 | ECJ2VF1C105Z | CAP C 1.0UF-Z-16V | |
| C060 | ECEA1CN220UB | CAP E 22UF-16V | |
| C061 | ECA1HM100B | CAP E 10UF/50V | |
| C062 | ECA1HM100B | CAP E 10UF/50V | |
| C063 | ECJ2VF1C104Z | CAP C .1UF-Z-16V | |
| C064 | ECA1CM101B | CAP E 100UF/16V | |
| C066 | TCJ2VC1H330J | CAP C 33PF-J-50V | |
| C067 | TCJ2VC1H680J | CAP C 68PF-J-50V | |
| C068 | ECA1CM100B | CAP E 10UF-16V | |
| C070 | ECJ2VF1C104Z | CAP C .1UF-Z-16V | |
| C071 | TCJ2VF1H103Z | CAP C .01UF-Z-50V | |
| C072 | TCJ2VB1H221K | CAP C 220PF-K-50V | |
| C073 | TCJ2VC1H101J | CAP C 100PF-J-50V | |
| C077 | ECA1HM100B | CAP E 10UF/50V | |
| C079 | TCJ2VC1H220J | CAP C 22PF-J-50V | |
| C083 | TCJ2VF1H103Z | CAP C .01UF-Z-50V | |
| C085 | ECJ2VB1C104K | CAP C .1UF-K-16V | |
| C350 | ECA1CM101B | CAP E 100UF/16V | |
| C351 | TCJ2VC1H101J | CAP C 100PF-J-50V / CT-20G8G CT-20G8SG CT-20L8G | |
| C351 | TCJ2VC1H331J | CAP C 330PF-J-50V / CT-25L8G CT-25L8UG | |
| C352 | TCJ2VC1H101J | CAP C 100PF-J-50V / CT-20G8G CT-20G8SG CT-20L8G | |
| C352 | TCJ2VC1H331J | CAP C 330PF-J-50V / CT-25L8G CT-25L8UG | |
| C353 | TCJ2VC1H151J | CAP C 150PF-J-50V / CT-20G8G CT-20G8SG CT-20L8G | |
| C353 | TCJ2VC1H331J | CAP C 330PF-J-50V / CT-25L8G CT-25L8UG | |
| C354 | ECKW3D102KBN | CAP C .001UF-K-2KVDC | |
| C357 | EEANA1E1R0B | CAP E 1.0UF-25V | |
| C359 | ECA1CM471B | CAP E 470UF-16V | |
| C360 | ECA1HM4R7B | CAP E 4.7UF-50V | |
| C370 | ECA1HM100B | CAP E 10UF/50V / CT-25L8G CT-25L8UG | |
| C403 | ECEA1CN220UB | CAP E 22UF-16V | |
| C411 | ECQB1H683JF3 | CAP P .068UF-J-50V | |
| C451 | ECA1HM2R2B | CAP E 2.2UF-50V | |
| C452 | ECA1CM220B | CAP E 22UF-16V | |
| C454 | ECA1VHG101B | CAP E 100UF-35V | |
| C455 | ECA1EM102E | CAP E 1000UF-25V | |
| C458 | ECA1HM010B | CAP E 1UF-50V | |
| C459 | ECA1VHG471E | CAP E 470UF-35V | |
| C460 | ECQB1224KF3 | CAP P .22UF-K-100V | |
| C461 | ECQB1104JF3 | CAP P .10UF-J-100V / CT-25L8G CT-25L8UG | |
| C462 | ECJ2VF1H103Z | CAP C .01UF-Z-50V | |

| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| C501 | ECCR1H221JC5 | CAP C 220PF-J-50V | |
| C505 | ECQB1H104JF3 | CAP P .10UF-J-50V | |
| C506 | ECKR2H102KB5 | CAP C 1000PF-K-500V | |
| C510 | ECCR2H100D5 | CAP C 10PF-D-500V | |
| C512 | ECA2CM100B | CAP E 10UF-160V | |
| C531 | ECA1HM4R7B | CAP E 4.7UF-50V | ⚠ |
| C540 | TCJ2VF1H103Z | CAP C .01UF-Z-50V | |
| C551 | ECA1VHG471B | CAP E 470UF-35V | ⚠ |
| C554 | ECKR2H561KB5 | CAP C 560PF-K-500V | |
| C555 | ECA2EM220E | CAP E 22UF-250V / CT-25L8G CT-25L8UG | ⚠ |
| C555 | ECA2EM470E | CAP E 47UF-250V / CT-20G8G CT-20G8SG CT-20L8G | ⚠ |
| C556 | ECA1CM471B | CAP E 470UF-16V | ⚠ |
| C557 | ECKR2H102KB5 | CAP C 1000PF-K-500V / CT-25L8G CT-25L8UG | |
| C557 | ECKR2H222KB5 | CAP C 2200PF-K-500V / CT-20G8G CT-20G8SG CT-20L8G | |
| C560 | ECQB1104JFW | OR ECQB1104JF3 | ⚠ |
| C561 | ECEA1HN010UB | CAP E 1UF/50V | |
| C562 | ECKR2H561KB5 | CAP C 560PF-K-500V | |
| C563 | ECWH12H362JS | CAP P 3600PF-J-1.2KV / CT-20G8G CT-20G8SG CT-20L8G | ⚠ |
| C563 | ECWH16622JVB | CAP P 6200PF-J-1.5KV / CT-25L8G CT-25L8UG | ⚠ |
| C564 | ECWH12H822JS | CAP P .0082UF-J-1.2KV / CT-25L8G CT-25L8UG | ⚠ |
| C564 | ECWH12H472JS | CAP P .0047UF-J-1.2KV / CT-20G8G CT-20G8SG CT-20L8G | ⚠ |
| C565 | ECKW3D561JBR | CAP P 560PF-J-2KV / CT-25L8G CT-25L8UG | ⚠ |
| C565 | ECKW3D821JBP | CAP C 820PF-J-2KV / CT-20G8G CT-20G8SG CT-20L8G | ⚠ |
| C566 | ECKW3D181JBP | CAP C 180PF-J-2KV | ⚠ |
| C568 | ECQM4473JZW | CAP P .047UF-J-400V / CT-20G8G CT-20G8SG CT-20L8G | ⚠ |
| C568 | ECWF2224JBB | CAP P .22UF-J-200V / CT-25L8G CT-25L8UG | ⚠ |
| C569 | ECWF2394JSR | CAP M .39UF-J-200V / CT-20G8G CT-20G8SG CT-20L8G | ⚠ |
| C569 | ECWF2474JSR | CAP P .47UF-J-200V / CT-25L8G CT-25L8UG | ⚠ |
| C570 | ECA1CM221B | CAP E 10UF-16V | |
| C571 | ECA1CM220B | CAP E 22UF-16V | |
| C572 | ECA0JM221B | CAP E 220UF-6.3V | |
| C573 | ECA1CM101B | CAP E 100UF/16V | |
| C575 | ECKR2H471KB5 | CAP C 470PF-K-500V | |
| C593 | ECA1CM470B | CAP E 47UF/16V | |
| C605 | TCJ2VF1H103Z | CAP C .01UF-Z-50V | |
| C606 | ECA0JM221B | CAP E 220UF-6.3V | |
| C800 | ECKR3A152KBP | CAP C 1500PF-K-1KVDC | |
| C801 | ECKWAE472ZED | CAP C 4700PF-Z-500V | ⚠ |
| C802 | ECKWAE472ZED | CAP C 4700PF-Z-500V | ⚠ |
| C803 | ECKWAE472ZED | CAP C 4700PF-Z-500V | ⚠ |
| C805 | EC0S2DA221BB | CAP E 220UF/200V / CT-20G8G CT-20G8SG CT-20L8G | ⚠ |
| C805 | EC0S2DA331BB | CAP E 330UF/200V / CT-25L8G CT-25L8UG | ⚠ |
| C806 | ECQM4103KZW | CAP P .01UF-K-400V | |
| C808 | ECA1HM470B | CAP E 47UF-50V | |
| C809 | ECKR1H102KB5 | CAP C .001UF-K-50V / CT-25L8G CT-25L8UG | |
| C809 | ECKR1H152KB5 | CAP C 1500PF-K-50V / CT-20G8G CT-20G8SG CT-20L8G | |
| C810 | ECKR1H471KB5 | CAP C 470PF-K-50V | |
| C812 | ECQU2A224MVA | CAP P .22UF-M-250VAC | ⚠ |
| C813 | ECQU2A153MVA | CAP P .015UF-M-250VAC | ⚠ |
| C814 | ECQU2A153MVA | CAP P .015UF-M-250VAC | ⚠ |

| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| C820 | ECA1CM101B | CAP E 100UF/16V | |
| C821 | TCJ2VF1H103Z | CAP C .01UF-Z-50V | |
| C822 | ECKR3A221KBP | CAP C 220PF-K-1KV | |
| C823 | ECA1VM471B | CAP E 470UF-35V | ⚠ |
| C824 | ECKR3A102KBP | CAP C 1000PF-K-1KV | |
| C825 | EEUMG2C221S | CAP E 220UF-160V | ⚠ |
| C826 | ECKR3A471KBP | CAP C 470PF-K-1KV | |
| C827 | ECA1CM102B | CAP E 1000UF/16V | |
| C828 | ECA160V33UE | CAP E 33UF/160V | ⚠ |
| C829 | ECA1CM471B | CAP E 470UF-16V | |
| C830 | ECA1CM471B | CAP E 470UF-16V | |
| C2201 | ECA1HM4R7B | CAP E 4.7UF-50V | |
| C2202 | ECA1HM2R2B | CAP E 2.2UF-50V | |
| C2203 | ECA1HM4R7B | CAP E 4.7UF-50V | |
| C2204 | AP106K016CAE | CAP T 10UF/16V | |
| C2205 | ECA1HMR33B | CAP E .33UF-50V | |
| C2206 | ECQB1H223JF3 | CAP P .022UF-J-50V | |
| C2207 | AP335K016CAE | CAP T 3.3UF/16V | |
| C2208 | ECJ2VB1C104K | CAP C .1UF-K-16V | |
| C2209 | ECJ2VB1C104K | CAP C .1UF-K-16V | |
| C2210 | ECJ2VB1C104K | CAP C .1UF-K-16V | |
| C2212 | ECQB1H473JF3 | CAP P .047UF-J-50V | |
| C2213 | ECA1HMR47B | CAP E .47UF-50V | |
| C2214 | ECA1AM101B | CAP E 100UF-10V | |
| C2215 | EEANA1E100B | CAP E 10UF-25V | |
| C2216 | TCJ2VC1H100D | CAP C 10PF-J-50V | |
| C2217 | ECJ2VB1H102K | CAP C .001UF-K-50V | |
| C2218 | ECJ2VB1H102K | CAP C .001UF-K-50V | |
| C2219 | ECJ2VF1C105Z | CAP C 1.0UF-Z-16V | |
| C2220 | ECJ2VF1C105Z | CAP C 1.0UF-Z-16V | |
| C2301 | ECA1EM102E | CAP E 1000UF-25V | |
| C2302 | ECA1HM010B | CAP E 1UF-50V | |
| C2304 | ECA1CM101B | CAP E 100UF/16V | |
| C2307 | ECA1CM102B | CAP E 1000UF/16V | |
| C2308 | ECKR1H103ZF3 | CAP C .01UF-Z-50V | |
| C2312 | ECA1HM010B | CAP E 1UF-50V | |
| C2313 | ECA1EM220B | CAP E 22UF-25V | |
| C2317 | ECA1CM102B | CAP E 1000UF/16V | |
| C2350 | ECA1CM101B | CAP E 100UF/16V | |
| C3001 | ECA1CM220B | CAP E 22UF-16V | |
| C3002 | ECA1CM220B | CAP E 22UF-16V | |
| C3011 | ECJ2VF1C105Z | CAP C 1.0UF-Z-16V | |
| C3012 | ECA1HM010B | CAP E 1UF-50V | |
| C3013 | ECA1CM100B | CAP E 10UF-16V | |
| C3014 | ECA1CM100B | CAP E 10UF-16V | |
| C3018 | ECA1HM010B | CAP E 1UF-50V | |
| C3019 | ECJ2VF1C105Z | CAP C 1.0UF-Z-16V | |
| C3025 | ECA1HM100B | CAP E 10UF/50V | |
| C3234 | ECA1CM470B | CAP E 47UF/16V | |
| C3240 | TCJ2VF1H103Z | CAP C .01UF-Z-50V | |
| DIODES | | | |
| D001 | MAZ30680ML | DIODE | |
| D002 | MA2C165001VT | DIODE | |

| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| D003 | MAZ30510HL | DIODE | |
| D006 | MAZ33000HL | DIODE | |
| D007 | MAZ30510HL | DIODE | |
| D010 | MAZ40510MF | DIODE ZENER | |
| D055 | MAZ40330MF | DIODE ZENER | |
| D360 | MA2C165001VT | DIODE | |
| D380 | MA2C029WBF | DIODE | |
| D451 | B0EAKL000008 | DIODE RECTIFIER | |
| D452 | MA2C165001VT | DIODE | |
| D505 | D1NL40V70 | DIODE | |
| D531 | MA2C165001VT | DIODE | ⚠ |
| D551 | B0HAMM000072 | DIODE FAST RECOVERY | ⚠ |
| D554 | AU02V0 | DIODE | ⚠ |
| D556 | MA2C165001VT | DIODE | |
| D557 | MAZ40270LF | DIODE ZENER | |
| D558 | B0HANV000008 | DIODE | |
| D559 | EU2 | DIODE | |
| D561 | AU02V0 | DIODE | ⚠ |
| D606 | MA2C165001VT | DIODE | |
| D801 | D3SBA60-4103 | DIODE | ⚠ |
| D803 | MAZ41200MF | DIODE ZENER | |
| D806 | TAP2AA0003 | PTC 3-OHM | ⚠ |
| D808 | SARS01V1 | DIODE | |
| D809 | B0HAJP000015 | DIODE | |
| D810 | B0HAJP000015 | DIODE | |
| D811 | B0HAJP000015 | DIODE | |
| D820 | MA2C165001VT | DIODE | |
| D821 | MAZ40470HF | DIODE ZENER | |
| D822 | B0HAMM000103 | DIODE | |
| D823 | S3L60P154004 | DIODE | ⚠ |
| D824 | B0HAMM000072 | DIODE FAST RECOVERY | |
| D2302 | MAZ43000MF | DIODE ZENER | |
| D2305 | CVS20A120MTA | DIODE | |
| D2307 | CVS20A120MTA | DIODE | |
| D2350 | MAZ40910LF | DIODE | |
| D2355 | MAZ30510HL | DIODE | |
| D3001 | MAZ40510MF | DIODE ZENER | |
| D3004 | CVS20A120MTA | DIODE | |
| D3005 | CVS20A120MTA | DIODE | |
| D3007 | MAZ31100ML | DIODE ZENER | |
| D3008 | MAZ31100ML | DIODE ZENER | |
| D3009 | MAZ31100ML | DIODE ZENER | |
| D3010 | MAZ31100ML | DIODE ZENER | |
| D3011 | MAZ31100ML | DIODE ZENER | |
| D3012 | MAZ31100ML | DIODE ZENER | |
| D3017 | MAZ31100ML | DIODE ZENER | |
| D3018 | MAZ31100ML | DIODE ZENER | |
| D3019 | CVS20A120MTA | DIODE | |
| D3021 | CVS20A120MTA | DIODE | |
| D3023 | MAZ31100ML | DIODE ZENER | |
| D3024 | MAZ31100ML | DIODE ZENER | |
| FUSES | | | |
| F801 | XBA2A00101 | FUSE 6.3A 125V | ⚠ |

| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| INTEGRATED CIRCUITS | | | |
| IC001 | MN101E03GTB3 | MPU | |
| IC002 | TVR2AJ165S | EEPROM / CT-20G8G CT-20G8SG | |
| IC002 | TVR2AJ166S | EEPROM / CT-20L8G CT-25L8G CT-25L8UG | |
| IC003 | GP1UE282GK | IR SENSOR | |
| IC004 | PST9128NR | RESET | |
| IC005 | PQ3RD13 | 3.3V STBY REGULATOR | |
| IC451 | AN5522 | VERTICAL OUT AMP | |
| IC501 | NC7SZU04M5X | H-DRIVE INVERTER | |
| IC551 | AN78M09LB | 9V VOLTAGE REGULATOR | |
| IC552 | AN78M05LB | 5V VOLTAGE REGULATOR | |
| IC801 | STRW5634 | MAIN POWER SUPPLY | ⚠ |
| IC802 | 0N3171RLF | OPTO-COUPLER | ⚠ |
| IC2201 | AN5829S-E1V | MTS | |
| IC2301 | AN17807A | AUDIO AMP | |
| IC3001 | MM1114XFBE | VIDEO SWITCH | |
| COILS | | | |
| L002 | EXCELSA39V | FERRITE BEAD | |
| L003 | EXCELDR35V | FERRITE BEAD | |
| L005 | EXCELSA35V | FERRITE BEAD | |
| L006 | EXCELSA35T | FERRITE BEAD | |
| L007 | ELESN330JA | COIL PEAKING 33UH | |
| L008 | G0C470KA0029 | COIL PEAKING 47UH | |
| L010 | G0C2R2KA0029 | COIL PEAKING 2.2UH | |
| L011 | EXCELSA26T | FERRITE BEAD | |
| L012 | G0C2R2KA0029 | COIL PEAKING 2.2UH | |
| L013 | EXCELSA26T | FERRITE BEAD | |
| L014 | ELESN180KA | COIL PEAKING 18UH | |
| L015 | ELESN3R3JA | COIL PEAKING 3.3UH | |
| L020 | EXCELSA26T | FERRITE BEAD | |
| L023 | EXCELSA26T | FERRITE BEAD / CT-25L8G CT-25L8UG | |
| L032 | EXCELSA26T | FERRITE BEAD | |
| L108 | EXCELSA35V | FERRITE BEAD | |
| L110 | G0C101KA0021 | COIL PEAKING 100UH | |
| L245 | EXCELSA35V | FERRITE BEAD | |
| L312 | EXCELSA24T | FERRITE BEAD | |
| L351 | G0C101KA0021 | COIL PEAKING 100UH / CT-25L8G CT-25L8UG | |
| L551 | ELH5L4101 | COIL / CT-20G8G CT-20G8SG CT-20L8G | ⚠ |
| L551 | ELH5L6128 | COIL HORIZ. LINEARITY / CT-25L8G CT-25L8UG | ⚠ |
| L552 | EXCELSA39V | FERRITE BEAD | |
| L801 | ELF15N011A | COIL / CT-20G8G CT-20G8SG CT-20L8G | ⚠ |
| L801 | ELF21V018A | COIL / CT-25L8G CT-25L8UG | ⚠ |
| L802 | ELEIN680KA | COIL PEAKING 68UH / CT-20G8G CT-20G8SG CT-20L8G | |
| L802 | TALL08T470KA | COIL / CT-25L8G CT-25L8UG | |
| L803 | TALL08T680KA | COIL | |
| L804 | EXCELDR35V | FERRITE BEAD / CT-20G8G CT-20G8SG CT-20L8G | |
| L805 | EXCELDR35V | FERRITE BEAD / CT-20G8G CT-20G8SG CT-20L8G | |
| L806 | EXCELDR35V | FERRITE BEAD | |
| L807 | EXCELSA35V | FERRITE BEAD | |
| L808 | EXCELSA35V | FERRITE BEAD | |
| L809 | EXCELDR35V | FERRITE BEAD / CT-25L8G CT-25L8UG | |
| L810 | EXCELDR35V | FERRITE BEAD / CT-25L8G CT-25L8UG | |
| L2301 | EXCELDR35V | FERRITE BEAD / CT-20L8G CT-25L8G CT-25L8UG | |

| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| L2303 | EXCELSA39T | FERRITE BEAD / CT-25L8G CT-25L8UG | |
| L2305 | EXCELSA35V | FERRITE BEAD | |
| TRANSISTORS | | | |
| Q001 | 2SD601ARTX | TRANSISTOR | |
| Q057 | 2SB709ARTX | TRANSISTOR | |
| Q058 | 2SB709ARTX | TRANSISTOR | |
| Q070 | 2SD601ARTX | TRANSISTOR | |
| Q092 | 2SB709ARTX | TRANSISTOR | |
| Q351 | 2SC3063RL | TRANSISTOR | |
| Q352 | 2SC3063RL | TRANSISTOR | |
| Q353 | 2SC3063RL | TRANSISTOR | |
| Q354 | 2SD601ARTX | TRANSISTOR | |
| Q355 | 2SD601ARTX | TRANSISTOR | |
| Q356 | 2SD601ARTX | TRANSISTOR | |
| Q357 | 2SD601ARTX | TRANSISTOR | |
| Q358 | 2SD601ARTX | TRANSISTOR | |
| Q359 | 2SD601ARTX | TRANSISTOR | |
| Q360 | 2SB709ARTX | TRANSISTOR | |
| Q361 | 2SB709ARTX | TRANSISTOR | |
| Q362 | 2SB709ARTX | TRANSISTOR | |
| Q411 | 2SB0710AQL | TRANSISTOR | |
| Q412 | 2SD0602AQL | TRANSISTOR | |
| Q451 | 2SB709ARTX | TRANSISTOR | |
| Q501 | 2SC1573AH | TRANSISTOR | |
| Q501 | 2SC4212HLB | TRANSISTOR / CT-25L8G CT-25L8UG | |
| Q551 | 2SC562200VLK | TRANSISTOR / CT-20G8G CT-20G8SG CT-20L8G | ⚠ |
| Q551 | 2SC5902000LK | TRANSISTOR / CT-25L8G CT-25L8UG | ⚠ |
| Q560 | 2SB709ARTX | TRANSISTOR | |
| Q605 | 2SB709ARTX | TRANSISTOR | |
| Q606 | 2SD601ARTX | TRANSISTOR | |
| Q801 | 2SD601ARTX | TRANSISTOR | |
| Q802 | 2SD601ARTX | TRANSISTOR | |
| Q820 | 2SA1767QTA | TRANSISTOR | |
| Q830 | 2SB1011QRL | TRANSISTOR | |
| Q831 | 2SC1473ATA | TRANSISTOR | |
| Q2350 | 2SB709ARTX | TRANSISTOR | |
| Q3001 | 2SD601ARTX | TRANSISTOR | |
| Q3002 | 2SD601ARTX | TRANSISTOR | |
| RELAYS | | | |
| RL801 | K6B1AGA00042 | RELAY | ⚠ |
| RESISTORS | | | |
| J327 | ERDS2TJ471T | RES C 470-J-1/2W | |
| R001 | ERJ6GEYJ103V | RES M 10K-J-1/10W | |
| R004 | ERJ6GEYJ562V | RES M 5.6K-J-1/10W | |
| R005 | ERJ6GEYJ471V | RES M 470-J-1/10W | |
| R007 | ERJ6GEYJ471V | RES M 470-J-1/10W | |
| R008 | ERJ6GEYJ223V | RES M 22K-J-1/10W | |
| R009 | ERJ6GEYJ102V | RES M 1K-J-1/10W | |
| R014 | ERJ6GEYJ472V | RES M 4.7K-J-1/10W | |
| R015 | ERJ6GEYJ472V | RES M 4.7K-J-1/10W | |
| R016 | ERJ6GEYJ221V | RES M 220-J-1/10W | |
| R017 | ERJ6GEYJ221V | RES M 220-J-1/10W | |
| R018 | ERJ6GEYJ472V | RES M 4.7K-J-1/10W | |

| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| R019 | ERJ6GEYJ472V | RES M 4.7K-J-1/10W | |
| R020 | ERJ6GEYJ221V | RES M 220-J-1/10W | |
| R021 | ERJ6GEYJ101V | RES M 100-J-1/10W | |
| R022 | ERJ6GEYJ101V | RES M 100-J-1/10W | |
| R023 | ERJ6GEYJ102V | RES M 1K-J-1/10W | |
| R024 | ERJ6GEYJ101V | RES M 100-J-1/10W | |
| R025 | ERJ6GEYJ101V | RES M 100-J-1/10W | |
| R026 | ERDS1FJ561P | RES C 560-J-1/2W | |
| R032 | ERJ6GEYJ103V | RES M 10K-J-1/10W | |
| R033 | ERJ6GEYJ222V | RES M 2.2K-J-1/10W | |
| R034 | ERJ6GEYJ222V | RES M 2.2K-J-1/10W | |
| R035 | ERJ6GEYJ332V | RES M 3.3K-J-1/10W | |
| R036 | ERJ6GEYJ512V | RES M 5.1K-J-1/10W | |
| R037 | ERJ6GEYJ912V | RES M 9.1K-J-1/10W | |
| R038 | ERJ6GEYJ223V | RES M 22K-J-1/10W | |
| R039 | ERDS2TJ102T | RES C 1K-J-1/4W | |
| R040 | ERJ6GEYJ680V | RES M 68-J-1/10W | |
| R041 | ERJ6GEYJ222V | RES M 2.2K-J-1/10W | |
| R042 | ERJ6GEYJ222V | RES M 2.2K-J-1/10W | |
| R043 | ERJ6GEYJ153V | RES M 15K-J-1/10W | |
| R044 | ERJ6GEYJ101V | RES M 100-J-1/10W | |
| R045 | ERDS2TJ101T | RES C 100-J-1/4W | |
| R046 | ERJ6GEYJ102V | RES M 1K-J-1/10W | |
| R047 | ERJ6GEYJ472V | RES M 4.7K-J-1/10W | |
| R048 | ERJ6GEYJ101V | RES M 100-J-1/10W | |
| R050 | ERJ6GEYJ102V | RES M 1K-J-1/10W | |
| R052 | ERJ6GEYJ103V | RES M 10K-J-1/10W | |
| R053 | ERJ6GEYJ101V | RES M 100-J-1/10W | |
| R055 | ERJ6GEYJ103V | RES M 10K-J-1/10W | |
| R056 | ERJ6GEYJ471V | RES M 470-J-1/10W | |
| R057 | ERJ6GEYJ101V | RES M 100-J-1/10W | |
| R060 | ERJ6GEYJ101V | RES M 100-J-1/10W | |
| R061 | ERJ6GEYJ221V | RES M 220-J-1/10W | |
| R062 | ERJ6GEYJ472V | RES M 4.7K-J-1/10W | |
| R063 | ERDS2TJ101T | RES C 100-J-1/4W | |
| R064 | ERJ6GEYJ473V | RES M 47K-J-1/10W | |
| R065 | ERDS2TJ101T | RES C 100-J-1/4W | |
| R066 | ERJ6GEYJ223V | RES M 22K-J-1/10W | |
| R067 | ERJ6GEYJ223V | RES M 22K-J-1/10W | |
| R068 | ERJ6GEYJ103V | RES M 10K-J-1/10W | |
| R069 | ERJ6GEYJ123V | RES M 12K-J-1/10W | |
| R070 | ERJ6GEYJ561V | RES M 560-J-1/10W | |
| R071 | ERJ6GEYJ680V | RES M 68-J-1/10W | |
| R072 | ERJ6GEYJ222V | RES M 2.2K-J-1/10W | |
| R073 | ERJ6GEYJ471V | RES M 470-J-1/10W | |
| R074 | ERJ6GEYJ471V | RES M 470-J-1/10W | |
| R075 | ERJ6ENF3902V | RES M 39K-F-1/10W | |
| R076 | ERJ6ENF6201V | RES M 6.2K-F-1/10W | |
| R077 | ERJ6GEYJ103V | RES M 10K-J-1/10W | |
| R078 | ERJ6GEYJ103V | RES M 10K-J-1/10W | |
| R080 | ERJ6GEYJ183V | RES M 18K-J-1/10W | |
| R081 | ERJ6GEYJ153 | RES M 15K-J-1/10 | |
| R082 | ERJ6GEYJ183V | RES M 18K-J-1/10W | |
| R083 | ERJ6GEYJ153V | RES M 15K-J-1/10W | |

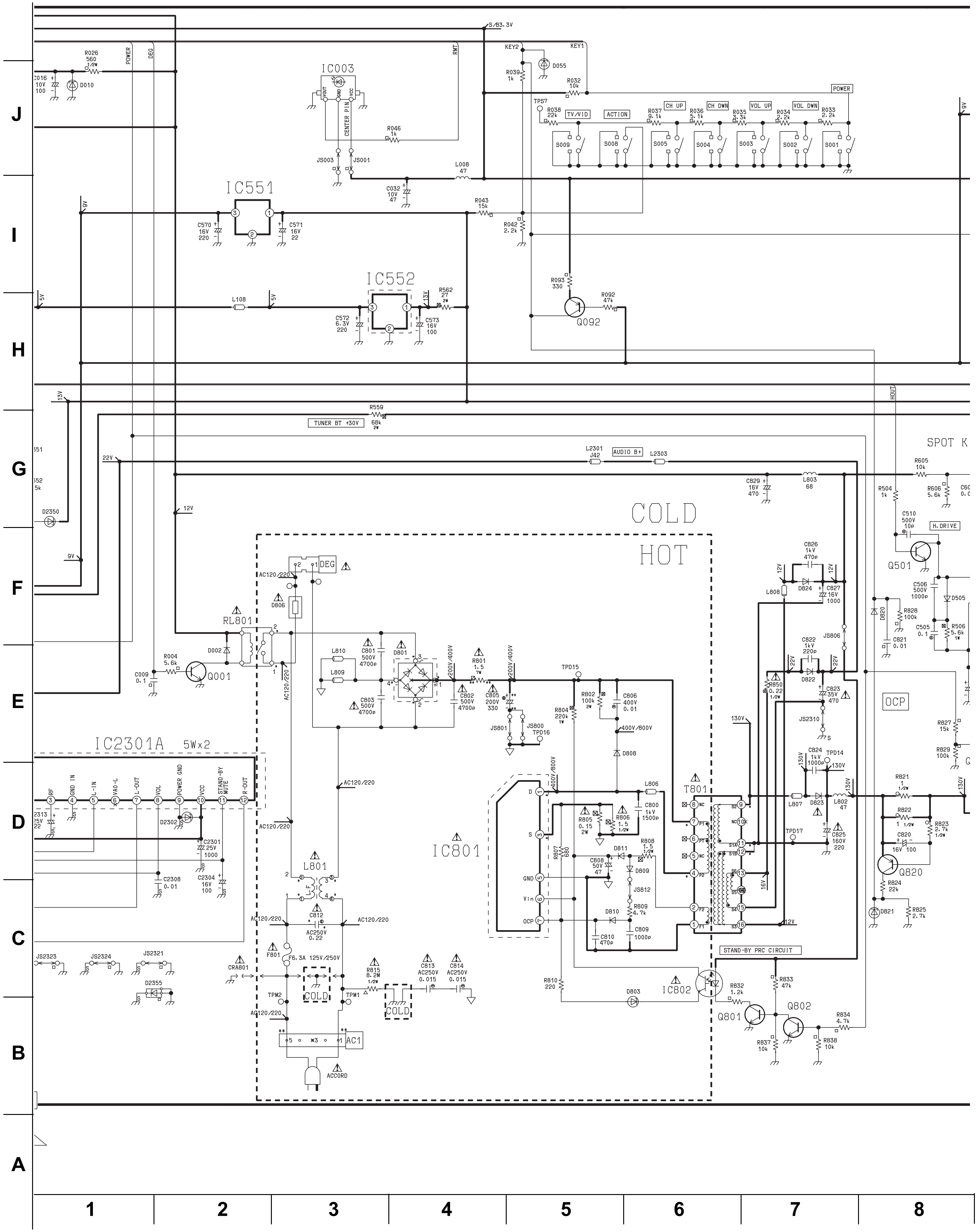
| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| R084 | ERDS2TJ182T | RES C 1.8K-J-1/4W | |
| R087 | ERDS2TJ221T | RES C 220-J-1/4W | |
| R088 | ERJ6GEYJ223V | RES M 22K-J-1/10W | |
| R092 | ERJ6GEYJ473V | RES M 47K-J-1/10W | |
| R093 | ERJ6GEYJ331V | RES M 330-J-1/10W | |
| R351 | ERG2FJ123H | RES M 12K-J-2W | |
| R352 | ERG2FJ123H | RES M 12K-J-2W | |
| R353 | ERG2FJ123H | RES M 12K-J-2W | |
| R354 | ERC12GK272C | RES C 2.7K-K-1/2W | |
| R355 | ERC12GK272C | RES C 2.7K-K-1/2W | |
| R356 | ERC12GK272C | RES C 2.7K-K-1/2W | |
| R357 | ERJ6ENF3300V | RES M 330-F-1/10W | |
| R358 | ERJ6ENF3300V | RES M 330-F-1/10W | |
| R359 | ERJ6ENF3300V | RES M 330-F-1/10W | |
| R360 | ERJ6ENF1101V | RES M 1.1K-F-1/10W / CT-20G8G CT-20G8SG CT-20L8G | |
| R360 | ERJ6ENF9100V | RES M 910-F-1/10W / CT-25L8G CT-25L8UG | |
| R361 | ERJ6ENF1101V | RES M 1.1K-F-1/10W / CT-20G8G CT-20G8SG CT-20L8G | |
| R361 | ERJ6ENF9100V | RES M 910-F-1/10W / CT-25L8G CT-25L8UG | |
| R362 | ERJ6ENF1101V | RES M 1.1K-F-1/10W / CT-20G8G CT-20G8SG CT-20L8G | |
| R362 | ERJ6ENF9100V | RES M 910-F-1/10W / CT-25L8G CT-25L8UG | |
| R363 | ERJ6GEYJ101V | RES M 100-J-1/10W | |
| R364 | ERJ6GEYJ101V | RES M 100-J-1/10W | |
| R365 | ERJ6GEYJ101V | RES M 100-J-1/10W | |
| R369 | ERDS2TJ393T | RES C 39K-J-1/4W / CT-25L8G CT-25L8UG | |
| R370 | ERDS2TJ224T | RES C 220K-J-1/4W / CT-25L8G CT-25L8UG | |
| R371 | ERJ6GEYJ101V | RES M 100-J-1/10W | |
| R372 | ERJ6GEYJ101V | RES M 100-J-1/10W | |
| R373 | ERJ6GEYJ101V | RES M 100-J-1/10W | |
| R374 | ERJ6GEYJ102V | RES M 1K-J-1/10W | |
| R375 | ERJ6GEYJ102V | RES M 1K-J-1/10W | |
| R376 | ERJ6GEYJ102V | RES M 1K-J-1/10W | |
| R377 | ERJ6ENF3300V | RES M 330-F-1/10W | |
| R378 | ERJ6ENF3300V | RES M 330-F-1/10W | |
| R379 | ERJ6ENF3300V | RES M 330-F-1/10W | |
| R380 | ERJ6ENF1501V | RES M 1.5K-F-1/10W | |
| R381 | ERJ6ENF1501V | RES M 1.5K-F-1/10W | |
| R382 | ERJ6ENF1501V | RES M 1.5K-F-1/10W | |
| R383 | ERJ6ENF3481V | RES M 3.48K-F-1/10W | |
| R384 | ERJ6ENF7500V | RES M 750-F-1/10W | |
| R385 | ERDS1FJ150P | RES C 15-J-1/2W | |
| R389 | ERJ6GEYJ102V | RES M 1K-J-1/10W | |
| R390 | ERJ6GEYJ102V | RES M 1K-J-1/10W | |
| R391 | ERJ6GEYJ102V | RES M 1K-J-1/10W | |
| R411 | ERJ6GEYJ682V | RES M 6.8K-J-1/10W | |
| R412 | ERJ6GEYJ471V | RES M 470-J-1/10W | |
| R413 | ERJ6GEYJ103V | RES M 10K-J-1/10W | |
| R414 | ERJ6GEYJ471V | RES M 470-J-1/10W | |
| R451 | ERDS1FJ1R0P | RES C 1.0-J-1/2W / CT-25L8G CT-25L8UG | |
| R451 | ERDS1FJ1R2P | RES C 1.2-J-1/2W / CT-20G8G CT-20G8SG CT-20L8G | |
| R453 | ERJ6GEYJ333V | RES M 33K-J-1/10W | |
| R454 | ERJ6GEYJ243V | RES M 24K-J-1/10W / CT-20G8G CT-20G8SG CT-20L8G | |
| R454 | ERJ6GEYJ363V | RES M 36K-J-1/10W / CT-25L8G CT-25L8UG | |
| R455 | ERJ6GEYJ103V | RES M 10K-J-1/10W | |
| R456 | ERG3FJ151 | RES M 150-J-3W | |

| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| R457 | ERDS1FJ1R0P | RES C 1.0-J-1/2W | |
| R458 | ERJ6GEYJ123V | RES M 12K-J-1/10W | |
| R459 | ERJ6GEYJ122V | RES M 1.2K-J-1/10W / CT-20G8G CT-20G8SG CT-20L8G | |
| R459 | ERJ6GEYJ152V | RES M 1.5K-J-1/10W / CT-25L8G CT-25L8UG | |
| R462 | ERJ6GEYJ472V | RES M 4.7K-J-1/10W | |
| R463 | ERJ6GEYJ473V | RES M 47K-J-1/10W | |
| R464 | ERJ6GEYJ103V | RES M 10K-J-1/10W | |
| R468 | ERJ6ENF1962V | RES M 19.6K-F-1/10W | |
| R469 | ERJ6ENF5621V | RES M 5.62K-F-1/10W | |
| R471 | ERJ6GEYJ223V | RES M 22K-J-1/10W / CT-25L8G CT-25L8UG | |
| R471 | ERJ6GEYJ333V | RES M 33K-J-1/10W / CT-20G8G CT-20G8SG CT-20L8G | |
| R504 | ERDS2TJ102T | RES C 1K-J-1/4W | |
| R505 | ERJ6GEYJ562V | RES M 5.6K-J-1/10W | |
| R506 | ERG1SJ562P | RES M 5.6K-J-1W | |
| R507 | ER0S2THF1802 | RES M 18K-F-1/4W | ⚠ |
| R509 | ERJ6ENF1002V | RES M 10K-F-1/10W | ⚠ |
| R510 | ERG3FJ472 | RES M 4.7K-J-3W / CT-20G8G CT-20G8SG CT-20L8G | ⚠ |
| R510 | ERG3FJ622 | RES M 6.2K-J-3W / CT-25L8G CT-25L8UG | ⚠ |
| R511 | ERG3FJ622 | RES M 6.2K-J-3W / CT-25L8G CT-25L8UG | ⚠ |
| R512 | ERJ6GEYJ222V | RES M 2.2K-J-1/10W | |
| R514 | ERJ6GEYJ392V | RES M 3.9K-J-1/10W | |
| R515 | ERDS2TJ101T | RES C 100-J-1/4W | |
| R532 | ERJ6ENF2202V | RES M 22K-F-1/10W | ⚠ |
| R533 | ERJ6ENF1003V | RES M 100K-F-1/10W | ⚠ |
| R540 | ERJ6GEYJ105V | RES M 1M-J-1/10W | |
| R541 | ERDS2TJ274T | RES C 27K-J-1/4W | |
| R542 | ERJ6GEYJ124V | RES M 120K-J-1/10W | |
| R551 | ERX12SJR47P | RES M .47-J-1/2W | ⚠ |
| R552 | ERDS1FJ1R0T | RES C 1.0-J-1/2W | ⚠ |
| R557 | ERJ6GEYJ103V | RES M 10K-J-1/10W | |
| R558 | ERQ1CKPR56S | RES F .56-K-1W / CT-25L8G CT-25L8UG | ⚠ |
| R558 | ERQ2CJP1R5S | RES F 1.5-J-2W / CT-20G8G CT-20G8SG CT-20L8G | ⚠ |
| R559 | ERG2FJ683H | RES M 12K-J-2W | |
| R561 | ERG2FJ102H | RES M 1K-J-2W | |
| R562 | ERG2FJ270H | RES M 27-J-2W | |
| R563 | ERG3FJ150H | RES M 15-J-3W | |
| R564 | ERDS2TJ104T | RES C 100K-J-1/4W | |
| R565 | ERDS2TJ393T | RES C 39K-J-1/4W / CT-25L8G CT-25L8UG | |
| R565 | ER0S2TKF9762 | RES M 97.6K-F-1/4W / CT-20G8G CT-20G8SG CT-20L8G | |
| R592 | ERJ6GEYJ472V | RES M 4.7K-J-1/10W | |
| R605 | ERDS2TJ103T | RES C 10K-J-1/4W | |
| R606 | ERJ6GEYJ562V | RES M 5.6K-J-1/10W | |
| R607 | ERJ6GEYJ102V | RES M 1K-J-1/10W | |
| R608 | ERJ6GEYJ104V | RES M 100K-J-1/10W | |
| R801 | ERF7ZK1R5 | RES W 1.5-K-7 / CT-25L8G CT-25L8UG | |
| R802 | ERG2FJ104H | RES M 100K-J-2W | |
| R804 | ERG1DJ224P | RES M220K-J-1W | |
| R805 | ERX2FZJR15H | RES M .18-J-2W | ⚠ |
| R806 | ERX12SJ1R5P | RES M 1.5-J-1/2W | ⚠ |
| R807 | ERDS2TJ681T | RES C 680-J-1/4W | |
| R808 | ERX12SJ1R5P | RES M 1.5-J-1/2W | |
| R809 | ERDS2TJ472T | RES C 4.7K-J-1/4 | |

| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| R810 | ERDS2TJ221T | RES C 220-J-1/4W | |
| R815 | ERC12ZGK825D | RES C 8.2MEG-K-1/2W | ⚠ |
| R817 | ERX3FJ6R8 | RES M 6.8-J-3W / CT-20G8G CT-20G8SG CT-20L8G | ⚠ |
| R821 | ERDS1FJ1R0T | RES C 1.0-J-1/2W / CT-25L8G CT-25L8UG | |
| R821 | ERDS1FJ1R5T | RES C 1.5-J-1/2W / CT-20G8G CT-20G8SG CT-20L8G | |
| R822 | ERDS1FJ1R0T | RES C 1.0-J-1/2W / CT-25L8G CT-25L8UG | |
| R822 | ERDS1FJ1R5T | RES C 1.5-J-1/2W / CT-20G8G CT-20G8SG CT-20L8G | |
| R823 | ERDS1FJ272T | RES C 2.7K-J-1/2W | |
| R824 | ERDS2TJ223T | RES C 22K-J-1/4W | |
| R825 | ERDS2TJ272T | RES C 2.7K-J-1/4W | |
| R827 | ERJ6GEYJ153V | RES M 15K-J-1/10W | |
| R828 | ERJ6GEYJ104V | RES M 100K-J-1/10W | |
| R829 | ERJ6GEYJ104V | RES M 100K-J-1/10W | |
| R830 | ERG2FJ273H | RES M 27K-J-2W | |
| R831 | ERDS2TJ682T | RES C 6.8K-J-1/4W | |
| R832 | ERJ6GEYJ122V | RES M 1.2K-J-1/10W / CT-25L8G CT-25L8UG | |
| R832 | ERJ6GEYJ512V | RES M 5.1K-J-1/10W / CT-20G8G CT-20G8SG CT-20L8G | |
| R833 | ERJ6GEYJ473V | RES M 47K-J-1/10W | |
| R834 | ERJ6GEYJ472V | RES M 4.7K-J-1/10W | |
| R837 | ERJ6GEYJ103V | RES M 10K-J-1/10W | |
| R838 | ERJ6GEYJ103V | RES M 10K-J-1/10W | |
| R850 | ERQ12HJR22P | RES F .22-J-1/2W / CT-25L8G CT-25L8UG | ⚠ |
| R850 | ERQ12HJR56P | RES F .56-J-1/2W / CT-20G8G CT-20G8SG CT-20L8G | ⚠ |
| R202 | ERJ6GEYJ222V | RES M 2.2K-J-1/10W | |
| R2201 | ERJ6GEYJ224V | RES M 220K-J-1/10W | |
| R2203 | ERJ6GEYJ272V | RES M 2.7K-J-1/10W | |
| R2204 | ERJ6GEYJ272V | RES M 2.7K-J-1/10W | |
| R2205 | ERDS2TJ101T | RES C 100-J-1/4W | |
| R2206 | ERDS2TJ273T | RES C 27K-J-1/4W | |
| R2207 | ERJ6GEYJ152V | RES M 1.5K-J-1/10W | |
| R2208 | ERJ6GEYJ152V | RES M 1.5K-J-1/10W | |
| R2301 | ERQ2CJP5R6S | RES F 5.6-J-2W / CT-20G8G CT-20G8SG CT-20L8G | |
| R2351 | ERJ6GEYJ102V | RES M 1K-J-1/10W | |
| R2352 | ERJ6GEYJ152V | RES M 1.5K-J-1/10W | |
| R2357 | ERJ6GEYJ472V | RES M 4.7K-J-1/10W | |
| R2370 | ERJ6GEYJ222V | RES M 2.2K-J-1/10W | |
| R3002 | ERJ6GEYJ221V | RES M 220-J-1/10W | |
| R3003 | ERJ6GEYJ221V | RES M 220-J-1/10W | |
| R3004 | ERDS2TJ101T | RES C 100-J-1/4W | |
| R3005 | ERJ6GEYJ334V | RES M 330K-J-1/10W | |
| R3006 | ERJ6GEYJ151V | RES M 150-J-1/10W | |
| R3007 | ERJ6GEYJ151V | RES M 150-J-1/10W | |
| R3008 | ERJ6ENF75R0V | RES M 75.0-F-1/10W | |
| R3009 | ERJ6GEYJ682V | RES M 6.8K-J-1/10W | |
| R3010 | ERJ6GEYJ334V | RES M 330K-J-1/10W | |
| R3011 | ERJ6GEYJ682V | RES M 6.8K-J-1/10W | |
| R3012 | ERDS2TJ101T | RES C 100-J-1/4W | |
| R3013 | ERJ6ENF75R0V | RES M 75.0-F-1/10W | |
| R3014 | ERJ6ENF75R0V | RES M 75.0-F-1/10W | |
| R3015 | ERJ6ENF75R0V | RES M 75.0-F-1/10W | |
| R3016 | ERDS2TJ181T | RES C 180-J-1/4W | |
| R3017 | ERDS2TJ181T | RES C 180-J-1/4W | |
| R3018 | ERDS2TJ101T | RES C 100-J-1/4W | |

| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| R3019 | ERJ6GEYJ682V | RES M 6.8K-J-1/10W | |
| R3020 | ERJ6GEYJ682V | RES M 6.8K-J-1/10W | |
| R3021 | ERDS2TJ101T | RES C 100-J-1/4W | |
| R3022 | ERDS2TJ101T | RES C 100-J-1/4W | |
| R3023 | ERDS2TJ101T | RES C 100-J-1/4W | |
| R3024 | ERDS2TJ101T | RES C 100-J-1/4W | |
| R3026 | ERDS2TJ101T | RES C 100-J-1/4W | |
| R3027 | ERDS2TJ101T | RES C 100-J-1/4W | |
| R3034 | ERJ6GEYJ471V | RES M 470-J-1/10W | |
| R3035 | ERJ6GEYJ562V | RES M 5.6K-J-1/10W | |
| R3036 | ERJ6GEYJ183V | RES M 18K-J-1/10W | |
| R3037 | ERJ6GEYJ471V | RES M 470-J-1/10W | |
| R3038 | ERJ6GEYJ562V | RES M 5.6K-J-1/10W | |
| R3039 | ERJ6GEYJ183V | RES M 18K-J-1/10W | |
| R3041 | ERJ6GEYJ472V | RES M 4.7K-J-1/10W | |
| R3042 | ERJ6GEYJ472V | RES M 4.7K-J-1/10W | |
| R3101 | ERJ6GEYJ334V | RES M 330K-J-1/10W | |
| R3102 | ERJ6GEYJ334V | RES M 330K-J-1/10W | |
| R3103 | ERJ6GEYJ334V | RES M 330K-J-1/10W | |
| R3104 | ERJ6GEYJ334V | RES M 330K-J-1/10W | |
| SWITCHES | | | |
| S001 | EVQPF106K | SWITCH | |
| S002 | EVQPF106K | SWITCH | |
| S003 | EVQPF106K | SWITCH | |
| S004 | EVQPF106K | SWITCH | |
| S005 | EVQPF106K | SWITCH | |
| S008 | EVQPF106K | SWITCH | |
| S009 | EVQPF106K | SWITCH | |
| TRANSFORMERS | | | |
| T501 | ETH19Y211AZ | TRASMFORMER | |
| T551 | TLF2AA004 | TRANSFORMER FLYBACK / CT-25L8G CT-25L8UG | ⚠ |
| T551 | ZTFN32501A | TRANSFORMER FLYBACK / CT-20G8G CT-20G8SG CT-20L8G | ⚠ |
| T801 | ETS29AS1N5NC | TRANSFORMER / CT-20G8G CT-20G8SG CT-20L8G | ⚠ |
| T801 | SRW35EC-U07V | TRANSFORMER SWITCHING / CT-25L8G CT-25L8UG | ⚠ |
| T3001 | TF0402B04P03 | TRANSFORMER | |
| T3002 | TF0402B04P03 | TRANSFORMER | |
| CRYSTALS / FILTERS | | | |
| X001 | A1100005BD | CRYSTAL | |
| OTHERS | | | |
| TNR001 | ENG36621G | TUNER | ⚠ |
| M001 | TSX2AA0361 | LINE CORD AC | |
| M002 | TJSC00300 | CRT SOCKET | |
| 1 | A51KQK99X01 | CRT 20 INCH, DEFLECTION YOKE, PURITY AND CONVERGENCE RINGS / CT-20G8G CT-20G8SG CT-20L8G | ⚠ |
| | A63QDB891X | CRT 25 INCH / CT-25L8G CT-25L8UG | ⚠ |
| 2 | TLY2AA027 | DEFLECTION YOKE / CT-25L8G CT-25L8UG | ⚠ |
| 3 | JH291U-009 | PURITY AND CONVERGENCE RINGS / CT-25L8G CT-25L8UG | |
| 4 | TSP2AA008 | COIL DEGAUSSING / CT-20G8G CT-20G8SG CT-20L8G | ⚠ |
| | TSP2AA028 | COIL DEGAUSSING / CT-25L8G CT-25L8UG | ⚠ |
| 5 | TXF3A01BA3 | ASSY. DAG GND / CT-20G8G CT-20G8SG CT-20L8G | |
| | TXF3A01DF3 | ASSY. DAG GND / CT-25L8G CT-25L8UG | |
| M003 | TMM2A30702 | WEDGE YOKE | |
| M004 | 0FMK014ZZ | CONVERGENCE CORRECTOR STRIP | |

| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| M005 | TSN40007 | MAGNET PURITY / CT-25L8G CT-25L8UG | |
| M006 | TSN63115-4 | MAGNET PURITY / CT-20G8G CT-20G8SG CT-20L8G | |
| 6 | TXFKY13GSER | ASSY CABINET FRONT / CT-20G8G | |
| | TXFKY14GSER | ASSY CABINET FRONT / CT-20L8G | |
| | TXFKY15GSER | ASSY CABINET FRONT / CT-20G8SG | |
| | TXFKY16GSER | ASSY CABINET FRONT / CT-25L8G CT-25L8UG | |
| 7 | TXFKU11GSER | ASSY CABINET BACK / CT-20G8G CT-20G8SG CT-20L8G | |
| | TXFKU12FSER | ASSY CABINET BACK / CT-25L8G CT-25L8UG | |
| 8 | TKX2AA00401 | IR GUIDE / CT-20G8G CT-20G8SG CT-20L8G | |
| | TKX2AA00403 | IR GUIDE / CT-25L8G CT-25L8UG | |
| 9 | TAS2AA0012 | SPEAKER 16-OHM 1.5W | |
| 10 | TBM2A10141 | BADGE PANASONIC / CT-20G8G | |
| | TBM2A10143 | BADGE PANASONIC / CT-20G8SG CT-20L8G CT-25L8G CT-25L8UG | |
| 11 | TBX2AA1303G | BUTTON 7-KEY / CT-25L8G CT-25L8UG | |
| | TBX2AA1701GS | BUTTON 7-KEY / CT-20G8G | |
| | TBX2AA1702G | BUTTON 7-KEY / CT-20L8G | |
| | TBX2AA1702GS | BUTTON 7-KEY / CT-20G8SG | |
| JK3001 | TJB2AA0221 | TERMINAL A/V 8P / CT-20L8G CT-25L8G CT-25L8UG | |
| JK3001 | TJB2A9064B | ASSY. JACK A/V / CT-20G8G CT-20G8SG | |
| JK3002 | TJB2AA0046 | TERMINAL FRONT A/V | |
| JK3003 | TJB2AA0171 | TERMINAL S-VIDEO / CT-20G8G CT-20G8SG | |
| | | OTHER ACCESSORIES | |
| M007 | TQB2AA0452-1 | OWNERS MANUAL / CT-20G8G CT-20G8SG CT-20L8G | |
| M008 | TQB2AA0461 | OWNERS MANUAL / CT-25L8G CT-25L8UG | |
| M009 | EUR7713010 | REMOTE CONTROL | |
| M010 | UR77EC1303A | BATTERY COVER REMOTE CONTROL | |


S/B3.3V
POWER
DEG
RMT
KEY2
KEY1
R026 560 1/2W
C016 10V 100
D010
IC003
CENTER PIN
R046 1k
JS003
JS001
L008 47
C032 10V 47
R039 1k
D055
R032 10k
POWER
TPS7
R038 22k
TV/VID
ACTION
R037 9.1k
CH UP
R036 5.1k
CH DWN
R035 3.3k
VOL UP
R034 2.2k
VOL DWN
R033 2.2k
S009
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9V
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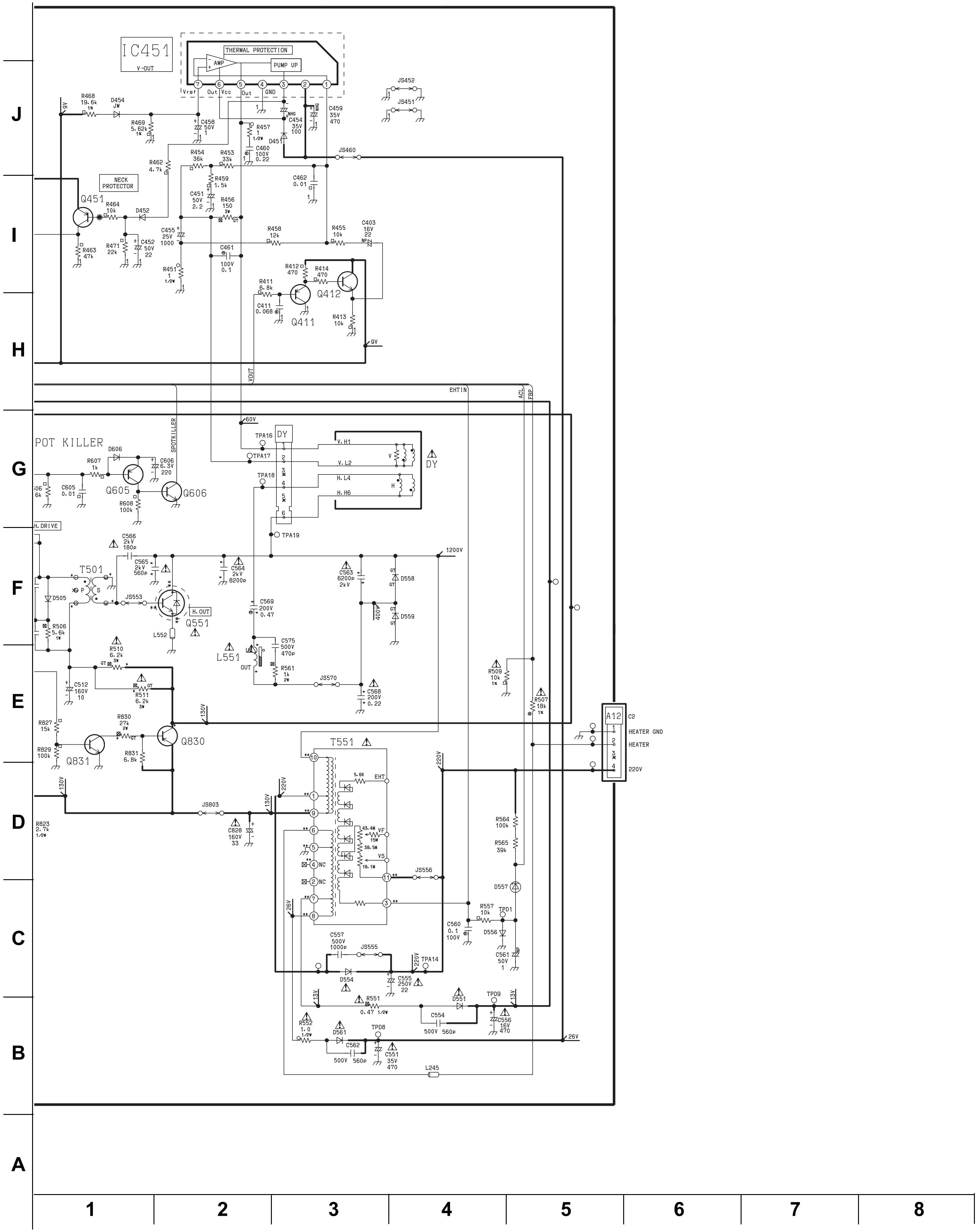
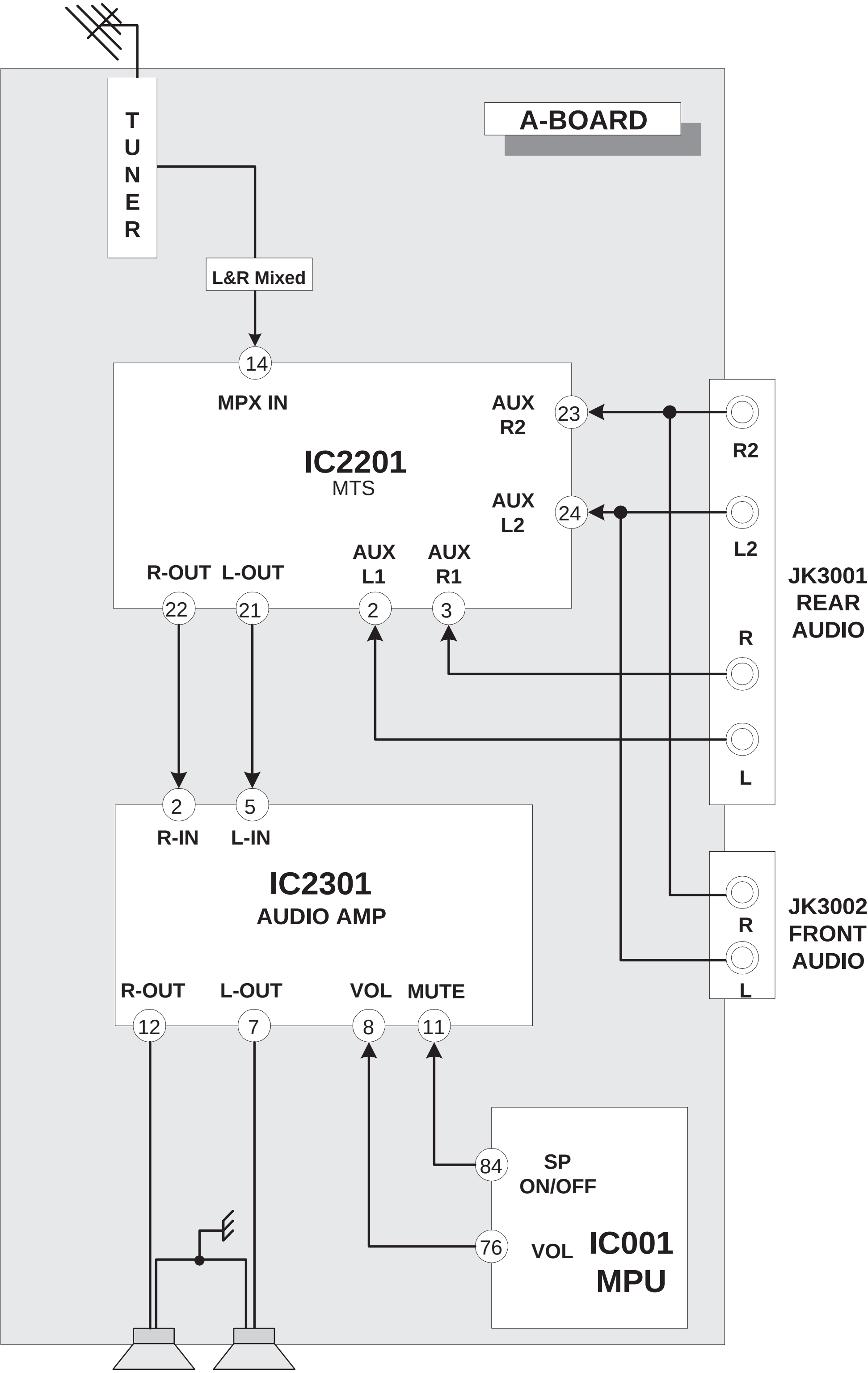
C571 16V 22
R043 15k
R042 2.2k
R093 330
Q092
R092 47k
5V
L108
IC552
13V
R562 27 2W
C572 6.3V 220
C573 16V 100
13V
R559 68k 2W
TUNER BT +30V
HOUT
SPOT K
22V
L2301 J42
AUDIO B+
L2303
R605 10k
C829 16V 470
L803 68
R504 1k
R606 5.6k
D2350
12V
COLD
HOT
C510 500V 10p
H.DRIVE
Q501
9V
DEG
AC120/220
D806
RL801
D002
R004 5.6k
Q001
C009 0.1
L810
L809
C801 500V 4700p
D801
C803 500V 4700p
C802 500V 4700p
200V/400V
R801 1.5 7W
C805 200V 330
JS801
JS800
TPD16
TPD15
R802 100k 2W
R804 220k 1W
C806 400V 0.01
400V/800V
D808
L808
D824
C826 1kV 470p
C827 16V 1000
C506 500V 1000p
D505
D820
R828 100k
C505 0.1
R506 5.6k 1W
JS806
C821 0.01
C822 1kV 220p
D822
R850 0.22 1/2W
C823 35V 470
JS2310
OCP
R827 15k
R829 100k
130V
IC2301A 5Wx2
RF
GND IN
L-IN
VAO-L
L-OUT
VOL
POWER GND
VCC
STAND-BY MUTE
R-OUT
D2302
C2301 25V 1000
C2308 0.01
C2304 16V 100
AC120/220
L801
IC801
D
S
GND
Vin
OCP
R805 0.15 2W
R806 1.5 1/2W
R807 680
C808 50V 47
D811
R808 1.5 1/2W
D809
JS812
R809 4.7k
D810
C810 470p
C809 1000p
L806
C800 1kV 1500p
T801
C824 1kV 1000p
TPD14
L807
D823
L802 47
R821 1 1/2W
R822 1 1/2W
R823 2.7k 1/2W
C820 16V 100
TPD17
C825 160V 220
Q820
R824 22k
D821
R825 2.7k
16V
12V
C812 AC250V 0.22
F801 F6.3A 125V/250V
CRA801
TPM2
TPM1
R815 8.2M 1/2W
C813 AC250V 0.015
C814 AC250V 0.015
COLD
COLD
AC1
ACCORD
STAND-BY PRC CIRCUIT
R810 220
D803
IC802
R833 47k
R832 1.2k
Q801
Q802
R834 4.7k
R837 10k
R838 10k
JS2323
JS2324
JS2321
D2355
A
B
C
D
E
F
G
H
I
J
1
2
3
4
5
6
7
8

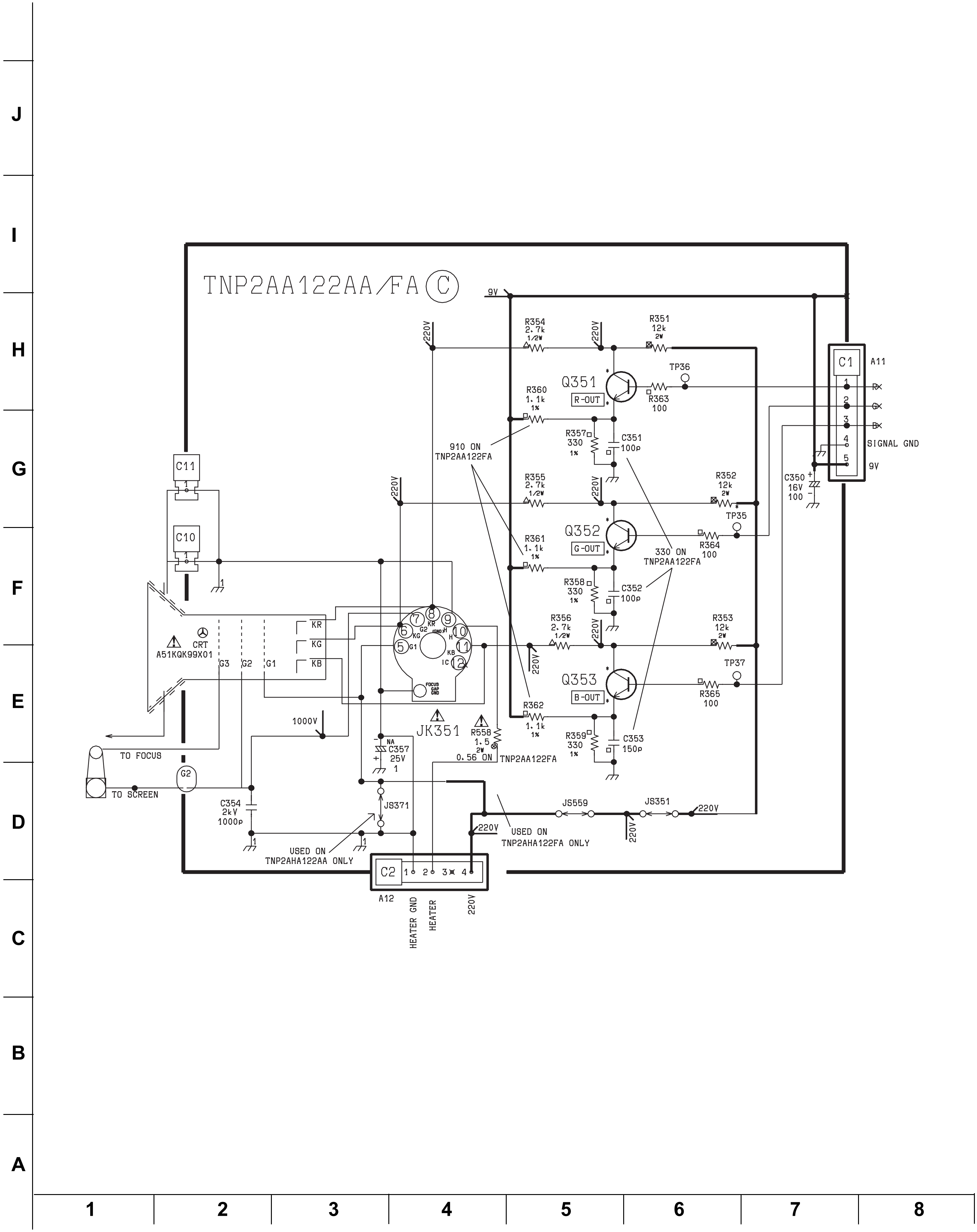

IC451
V-OUT
THERMAL PROTECTION
AMP
PUMP UP
Vref Out Vcc Out GND
R468 19.6k 1%
D454 JW
R469 5.62k 1%
C458 50V 1
R457 1 1/2W
C454 35V 100
C459 35V 470
D451
C460 100V 0.22
JS452
JS451
JS460
R462 4.7k
R454 36k
R453 33k
R459 1.5k
C462 0.01
NECK PROTECTOR
Q451
R464 10k
D452
C451 50V 2.2
R456 150 3W
C455 25V 1000
R458 12k
R455 10k
C403 16V 22
R463 47k
R471 22k
C452 50V 22
C461 100V 0.1
R451 1 1/2W
R412 470
R414 470
R411 6.8k
Q412
C411 0.068
Q411
R413 10k
9V
VOUT
EHTIN
ACL
FBP
60V
SPOTKILLER
POT KILLER
D606
R607 1k
C606 6.3V 220
Q605
Q606
C605 0.01
R608 100k
TPA16
DY
TPA17
TPA18
TPA19
V.H1
V.L2
H.L4
H.H6
H.DRIVE
C566 2kV 180p
T501
C565 2kV 560p
C564 2kV 8200p
C563 6200p 2kV
D558
1200V
D505
JS553
Q551
H.OUT
R506 5.6k 1W
L552
C569 200V 0.47
400V
D559
C575 500V 470p
L551
OUT
R561 1k 2W
JS570
C568 200V 0.22
R510 6.2k 3W
C512 160V 10
R511 6.2k 3W
R509 10k 1%
R507 18k 1%
130V
R827 15k
R830 27k 2W
Q830
R829 100k
Q831
R831 6.8k
T551
A12
C2
HEATER GND
HEATER
220V
5.6K
EHT
JS803
C828 160V 33
43.4M 15M
VF
38.5M
VS
18.1M
NC
JS556
R564 100k
R565 39k
D557
R823 2.7k 1/2W
26V
R557 10k
TPD1
C560 0.1 100V
D556
C561 50V 1
C557 500V 1000p
JS555
TPA14
D554
C555 250V 22
13V
R551 0.47 1/2W
D551
TPD9
C554 500V 560p
C556 16V 470
R552 1.0 1/2W
D561
TPD8
C562 500V 560p
C551 35V 470
L245
A B C D E F G H I J
1 2 3 4 5 6 7 8

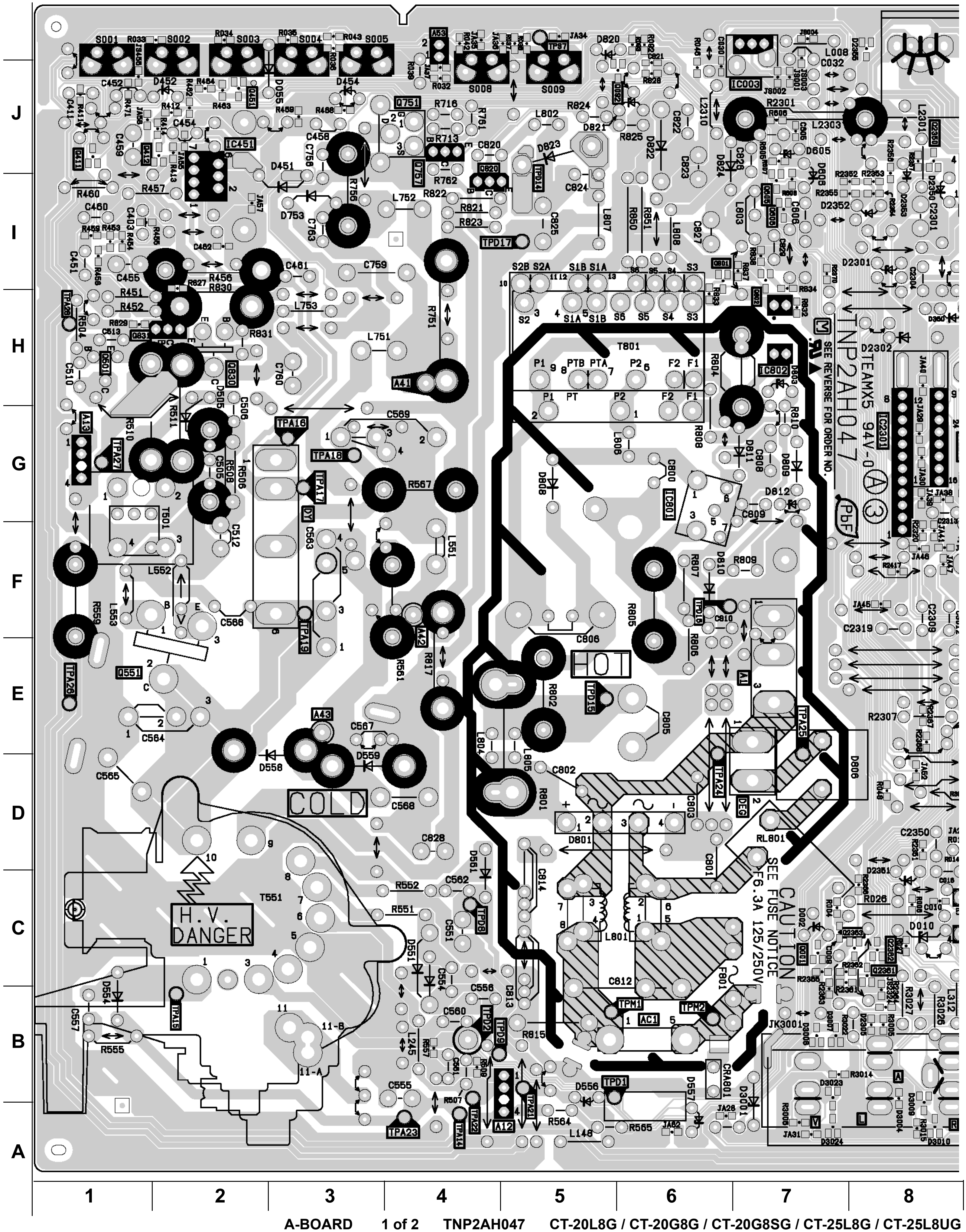
# Audio signal path block diagram



T U N E R
A-BOARD
L&R Mixed
14
MPX IN
AUX R2
23
IC2201
MTS
AUX L2
24
R-OUT
L-OUT
AUX L1
AUX R1
22
21
2
3
R2
L2
R
L
JK3001 REAR AUDIO
2
5
R-IN
L-IN
IC2301
AUDIO AMP
R-OUT
L-OUT
VOL
MUTE
12
7
8
11
R
L
JK3002 FRONT AUDIO
84
SP ON/OFF
76
VOL
IC001
MPU

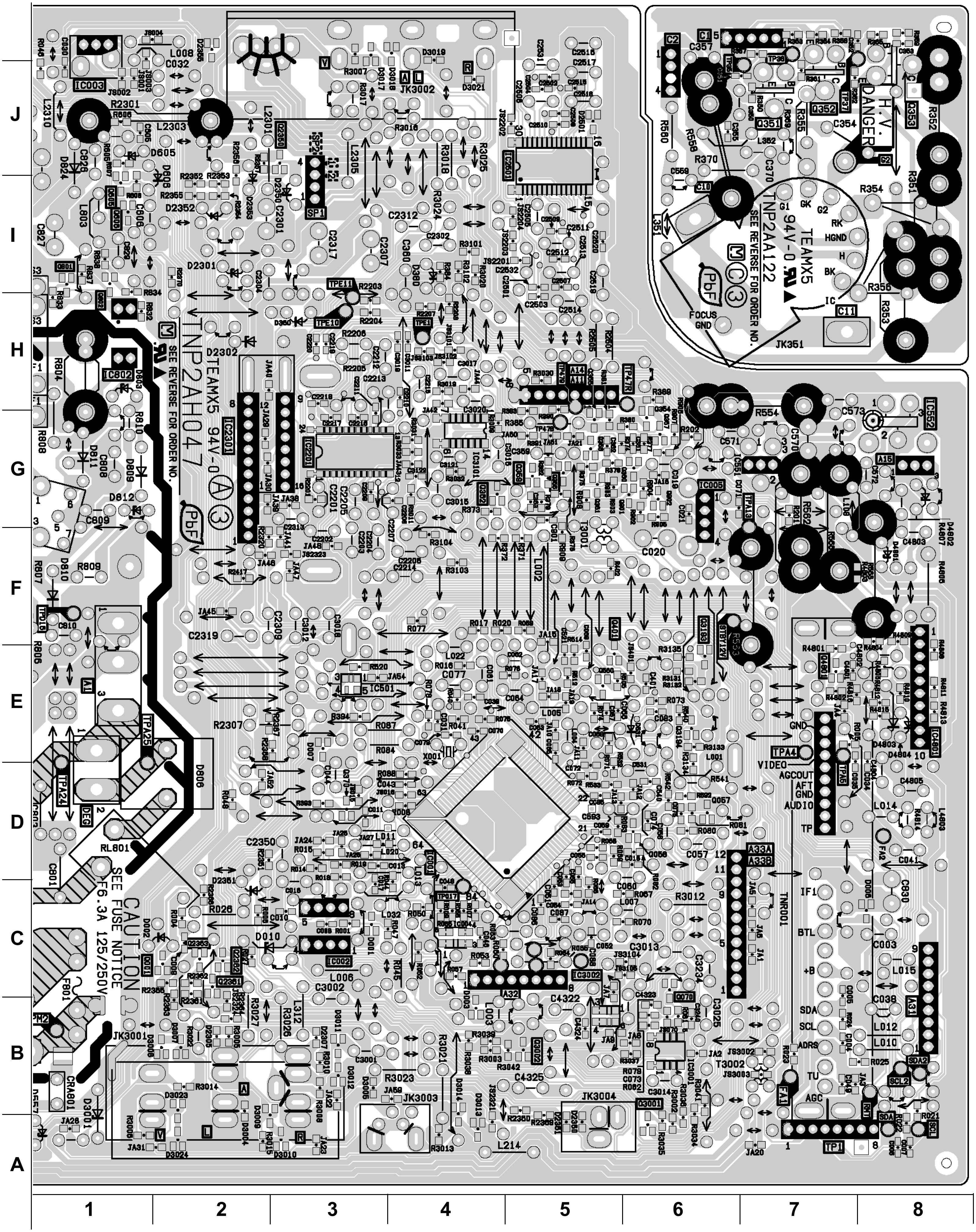
**CT-20L8G / CT-20G8G / CT-20G8SG / CT-25L8G / CT-25L8UG**


TNP2AA122AA/FA C
9V
220V
R354 2.7k 1/2W
R351 12k 2W
Q351 R-OUT
TP36
R363 100
C1
A11
1 R
2 G
3 B
4 SIGNAL GND
5 9V
R360 1.1k 1%
R357 330 1%
C351 100p
910 ON TNP2AA122FA
R355 2.7k 1/2W
R352 12k 2W
C350 16V 100
TP35
Q352 G-OUT
R364 100
R361 1.1k 1%
330 ON TNP2AA122FA
R358 330 1%
C352 100p
R356 2.7k 1/2W
R353 12k 2W
TP37
Q353 B-OUT
R365 100
R362 1.1k 1%
R359 330 1%
C353 150p
C11
C10
CRT A51KQK99X01
KR
KG
KB
G3 G2 G1
JK351
FOCUS GAP GND
1000V
R558 1.5 2W
0.56 ON TNP2AA122FA
NA C357 25V 1
TO FOCUS
TO SCREEN
G2
C354 2kV 1000p
JS371
USED ON TNP2AHA122AA ONLY
JS559
JS351
USED ON TNP2AHA122FA ONLY
C2
A12
HEATER GND
HEATER
1 2 3 4
J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8



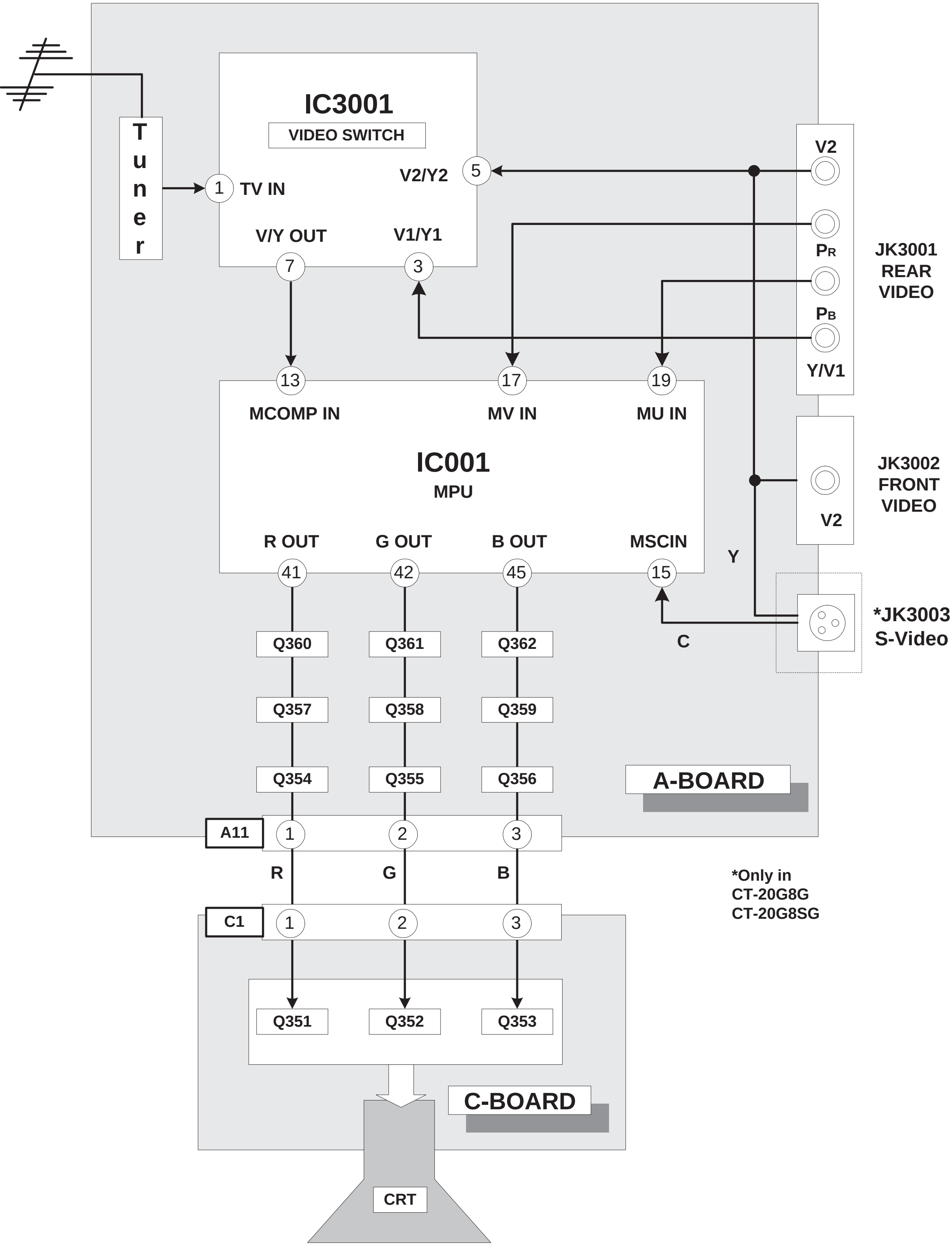
J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
S001
S002
S003
S004
S005
S008
S009
IC451
IC003
IC802
IC801
IC2301
Q751
T801
T501
T551
L801
RL801
D801
F801
JK3001
AC1
TPM1
TPM2
TPD1
HOT
COLD
H.V.
DANGER
CAUTION
SEE FUSE NOTICE
F6.3A 125/250V
SEE REVERSE FOR ORDER NO.
TNP2AH047
TEAMX5
94V-0
PbF
DEG
DY

A-BOARD 1 of 2 TNP2AH047 CT-20L8G / CT-20G8G / CT-20G8SG / CT-25L8G / CT-25L8UG


J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
TEAMX5 94V-0
TNP2AH047
SEE REVERSE FOR ORDER NO.
PbF
TEAMX5
94V-0
TNP2AA122
SEE REVERSE FOR ORDER NO.
H.V. DANGER
FOCUS
GND
JK351
G1
GK
G2
RK
HGND
H
BK
IC
CAUTION
SEE FUSE NOTICE
F6.3A 125/250V
F801
RL801
D806
DEG
IC003
IC802
IC2301
IC2201
IC3101
IC2501
IC501
IC001
IC002
IC3002
IC3001
IC005
IC552
IC4801
IC551
JK3001
JK3002
JK3003
JK3004
TNR001
VIDEO
AGCOUT
AFT
GND
AUDIO
TP
IF1
BTL
+B
SDA
SCL
ADRS
TU
AGC
TP1
SDA2
SCL2
SP1
TPA4
TPA24
TPA25
L214
X001
CRA601

A-BOARD 2 of 2 TNP2AH047 C-BOARD TNP2AA122 CT-20L8G / CT-20G8G / CT-20G8SG / CT-25L8G / CT-25L8UG

# Video signal path block diagram



IC3001
VIDEO SWITCH
Tuner
1 TV IN
V2/Y2 5
V/Y OUT 7
V1/Y1 3
V2
PR
PB
Y/V1
JK3001 REAR VIDEO
JK3002 FRONT VIDEO
V2
Y
C
*JK3003 S-Video
13 MCOMP IN
17 MV IN
19 MU IN
IC001
MPU
R OUT 41
G OUT 42
B OUT 45
MSCIN 15
Q360
Q361
Q362
Q357
Q358
Q359
Q354
Q355
Q356
A-BOARD
A11 1 2 3
R G B
C1 1 2 3
Q351
Q352
Q353
C-BOARD
CRT

*Only in
CT-20G8G
CT-20G8SG

CT-20L8G / CT-20G8G / CT-20G8SG / CT-25L8G / CT-25L8UG

# A - BOARD

| IC001 | | | |
|---|---|---|---|
| 1 | 0.00 | 43 | 2.50 |
| 2 | 0.00 | 44 | 1.70 |
| 3 | 0.00 | 45 | 0.00 |
| 4 | 0.00 | 46 | 0.00 |
| 5 | 0.00 | 47 | 3.30 |
| 6 | 1.20 | 48 | 1.90 |
| 7 | 1.20 | 49 | 1.90 |
| 8 | 1.30 | 50 | 1.60 |
| 9 | 3.30 | 51 | 1.70 |
| 10 | 0.00 | 52 | 3.30 |
| 11 | 2.70 | 53 | 1.70 |
| 12 | 1.50 | 54 | 1.40 |
| 13 | 1.40 | 55 | 3.30 |
| 14 | 0.40 | 56 | 1.40 |
| 15 | 1.60 | 57 | 0.00 |
| 16 | 2.20 | 58 | 0.00 |
| 17 | 0.07 | 59 | 3.30 |
| 18 | 1.70 | 60 | 3.30 |
| 19 | 0.00 | 61 | 3.30 |
| 20 | 1.40 | 62 | 0.70 |
| 21 | 1.00 | 63 | 3.30 |
| 22 | 2.60 | 64 | 3.30 |
| 23 | 0.00 | 65 | 3.40 |
| 24 | 1.90 | 66 | 3.50 |
| 25 | 1.90 | 67 | 0.10 |
| 26 | 1.40 | 68 | 3.20 |
| 27 | 0.00 | 69 | 0.00 |
| 28 | 0.00 | 70 | 0.00 |
| 29 | 1.30 | 71 | 0.00 |
| 30 | 1.80 | 72 | 5.20 |
| 31 | 1.00 | 73 | 5.20 |
| 32 | 3.30 | 74 | 0.00 |
| 33 | 1.70 | 75 | 0.00 |
| 34 | 0.80 | 76 | 0.00 |
| 35 | 0.00 | 77 | 3.30 |
| 36 | 0.60 | 78 | 0.00 |
| 37 | 3.30 | 79 | 0.00 |
| 38 | 3.30 | 80 | 3.30 |
| 39 | 2.30 | 81 | 5.20 |
| 40 | 1.70 | 82 | 3.30 |
| 41 | 0.40 | 83 | 0.00 |
| 42 | 0.40 | 84 | 3.30 |

| IC002 | |
|---|---|
| 1 | 0.00 |
| 2 | 0.00 |
| 3 | 0.00 |
| 4 | 0.00 |
| 5 | 3.40 |
| 6 | 3.40 |
| 7 | 5.20 |
| 8 | 5.20 |

| IC003 | |
|---|---|
| 1 | 0.00 |
| 2 | 3.31 |
| 3 | 3.27 |

| IC004 | |
|---|---|
| 1 | 0.00 |
| 2 | 0.00 |
| 3 | 0.00 |
| 4 | 3.30 |
| 5 | 3.30 |

| IC005 | |
|---|---|
| 1 | 9.10 |
| 2 | 3.30 |
| 3 | 0.00 |
| 4 | 9.10 |

| IC451 | |
|---|---|
| 1 | 2.00 |
| 2 | 23.30 |
| 3 | 1.20 |
| 4 | 0.00 |
| 5 | 11.60 |
| 6 | 23.50 |
| 7 | 2.00 |

| IC501 | |
|---|---|
| 1 | 0.00 |
| 2 | 1.35 |
| 3 | 0.00 |
| 4 | 1.05 |
| 5 | 3.30 |

| IC551 | |
|---|---|
| 1 | 12.20 |
| 2 | 0.00 |
| 3 | 9.00 |

| IC552 | |
|---|---|
| 1 | 7.50 |
| 2 | 0.00 |
| 3 | 5.00 |

| IC801↓ | |
|---|---|
| 1 | -21.00 |
| 2 | N/A |
| 3 | 0.10 |
| 4 | N/A |
| 5 | 0.00 |
| 6 | 32.24 |
| 7 | 1.50 |

| IC802↓ | |
|---|---|
| 1 | 2.30 |
| 2 | 32.24 |

| IC2201 | | | |
|---|---|---|---|
| 1 | 1.60 | 13 | 2.80 |
| 2 | 2.20 | 14 | 2.20 |
| 3 | 2.20 | 15 | 2.50 |
| 4 | 2.30 | 16 | 3.50 |
| 5 | 2.40 | 17 | 0.00 |
| 6 | 0.07 | 18 | 3.20 |
| 7 | 5.00 | 19 | 3.40 |
| 8 | 2.50 | 20 | 0.00 |
| 9 | 2.60 | 21 | 2.20 |
| 10 | 0.80 | 22 | 2.20 |
| 11 | 2.30 | 23 | 2.20 |
| 12 | 2.50 | 24 | 2.20 |

| IC2301 | |
|---|---|
| 1 | 6.40 |
| 2 | 5.60 |
| 3 | 16.80 |
| 4 | 0.00 |
| 5 | 5.60 |
| 6 | 6.30 |
| 7 | 8.60 |
| 8 | 0.00 |
| 9 | 0.00 |
| 10 | 18.30 |
| 11 | 3.10 |
| 12 | 8.70 |

| IC3001 | |
|---|---|
| 1 | 4.10 |
| 2 | 0.20 |
| 3 | 4.10 |
| 4 | 0.00 |
| 5 | 4.10 |
| 6 | 9.00 |
| 7 | 4.30 |
| 8 | 0.00 |

# A - BOARD

|  | Q001 | Q057 | Q058 | Q070 | Q092 | Q2350 | Q3001 | Q3002 | Q354 |
|---|---|---|---|---|---|---|---|---|---|
| B | 0.00 | 1.50 | 1.50 | 4.12 | 8.90 | 5.35 | 1.30 | 1.30 | 4.50 |
| C | 13.00 | 0.00 | 0.00 | 8.90 | 1.40 | 0.00 | 3.30 | 3.30 | 8.50 |
| E | 0.00 | 0.07 | 0.07 | 3.50 | 3.30 | 3.14 | 0.70 | 0.70 | 3.80 |

|  | Q355 | Q356 | Q357 | Q358 | Q359 | Q360 | Q361 | Q362 | Q411 |
|---|---|---|---|---|---|---|---|---|---|
| B | 4.30 | 4.40 | 2.60 | 2.60 | 2.60 | 0.50 | 0.40 | 0.40 | 2.25 |
| C | 8.40 | 8.40 | 4.50 | 4.30 | 4.40 | 0.00 | 0.00 | 0.00 | 0.00 |
| E | 3.60 | 3.70 | 2.00 | 2.00 | 2.00 | 1.10 | 1.10 | 1.10 | 2.90 |

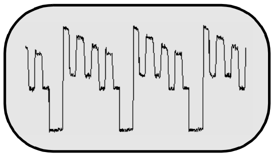
|  | Q412 | Q451 | Q501 | Q551 | Q560 | Q605 | Q606 | Q801 | Q802 |
|---|---|---|---|---|---|---|---|---|---|
| B | 2.90 | 5.10 | 0.40 | 0.00 | 0.30 | 4.80 | 0.00 | 0.00 | 0.70 |
| C | 9.00 | 1.40 | 56.80 | 14.70 | 0.00 | 0.00 | 3.30 | 12.52 | 0.00 |
| E | 2.40 | 3.30 | 0.00 | 0.00 | 0.60 | 4.70 | 0.00 | 0.00 | 0.00 |

|  | Q820 | Q830 | Q831 |
|---|---|---|---|
| B | 130.40 | 129.80 | 0.60 |
| C | 0.00 | 130.40 | 0.20 |
| E | 130.80 | 130.50 | 0.00 |

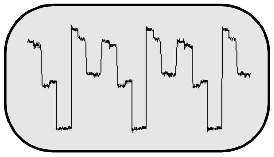
# C - BOARD

|  | Q351 | Q352 | Q353 |
|---|---|---|---|
| B | 130.40 | 129.80 | 0.60 |
| C | 0.00 | 130.40 | 0.20 |
| E | 130.80 | 130.50 | 0.00 |

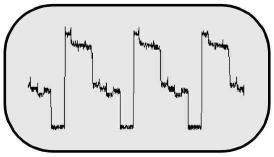
# A-Board



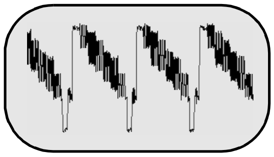
① **4 Vp-p**
A11 PIN 3 (BLUE OUT)



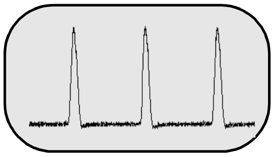
② **4 Vp-p**
A11 PIN 1 (RED OUT)



③ **4.32 V-p**
A11 PIN 2 (GREEN OUT)



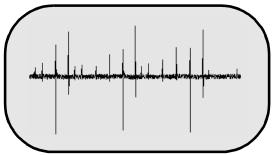
④ **1.3 Vp-p**
TPA5 (VIDEO)



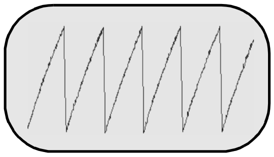
⑤ **3.28 Vp-p**
IC001 PIN 36 (FBP IN)

**10MHz X'tal**

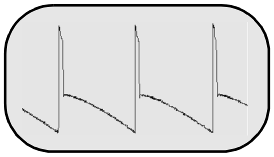
⑥
IC001 PIN 50 (OSC)



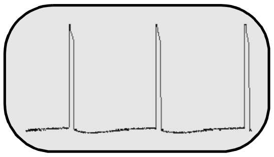
⑦ **600mv Vp-p**
IC451 PIN 1 (VERT IN)



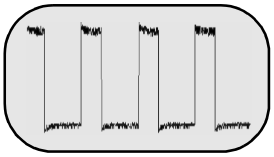
⑧ **3.88 Vp-p**
Q4111 B (V DRIVE)



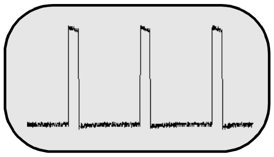
⑨ **56.8 Vp-p**
IC451 PIN 5(V OUT)



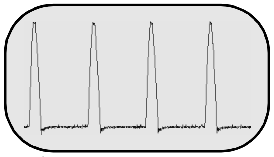
⑩ **28 Vp-p**
IC451 PIN 3 (PUMP UP)



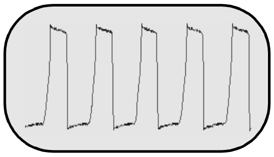
⑪ **3.20 Vp-p**
IC501 PIN 4 (H-DRIVE)



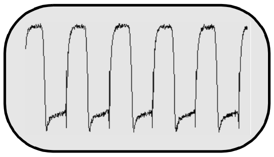
⑫ **114 Vp-p**
A12 PIN 2 (HEATER)



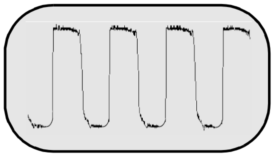
⑬ **1.18 kVp-p**
Q551 Collector (H OUT)



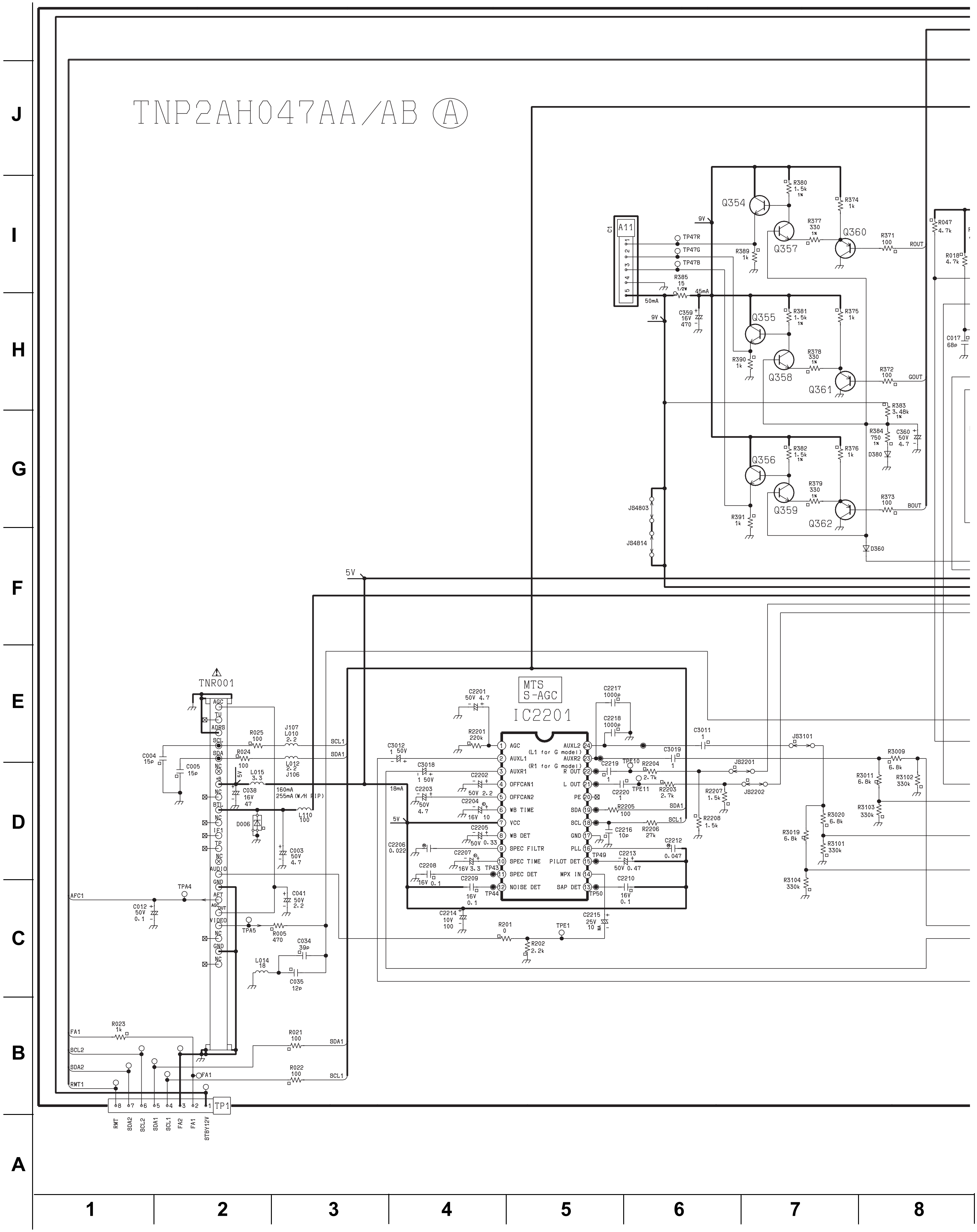
⑭ **356 Vp-p**
IC801 PIN 1



⑮ **2.88 Vp-p**
IC801 PIN 7



⑯ **114 Vp-p**
Q501 Collector


J
I
H
G
F
E
D
C
B
A
1
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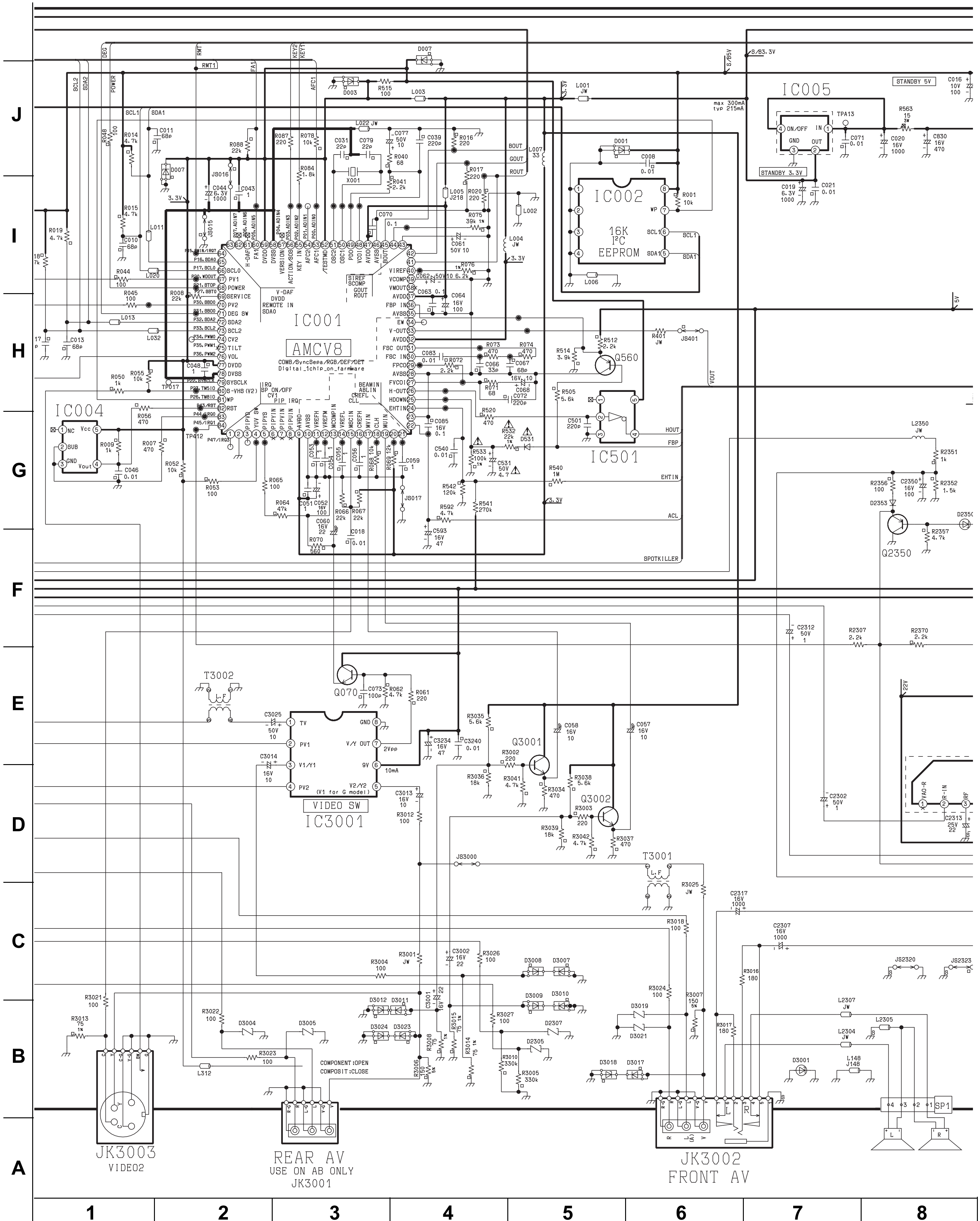
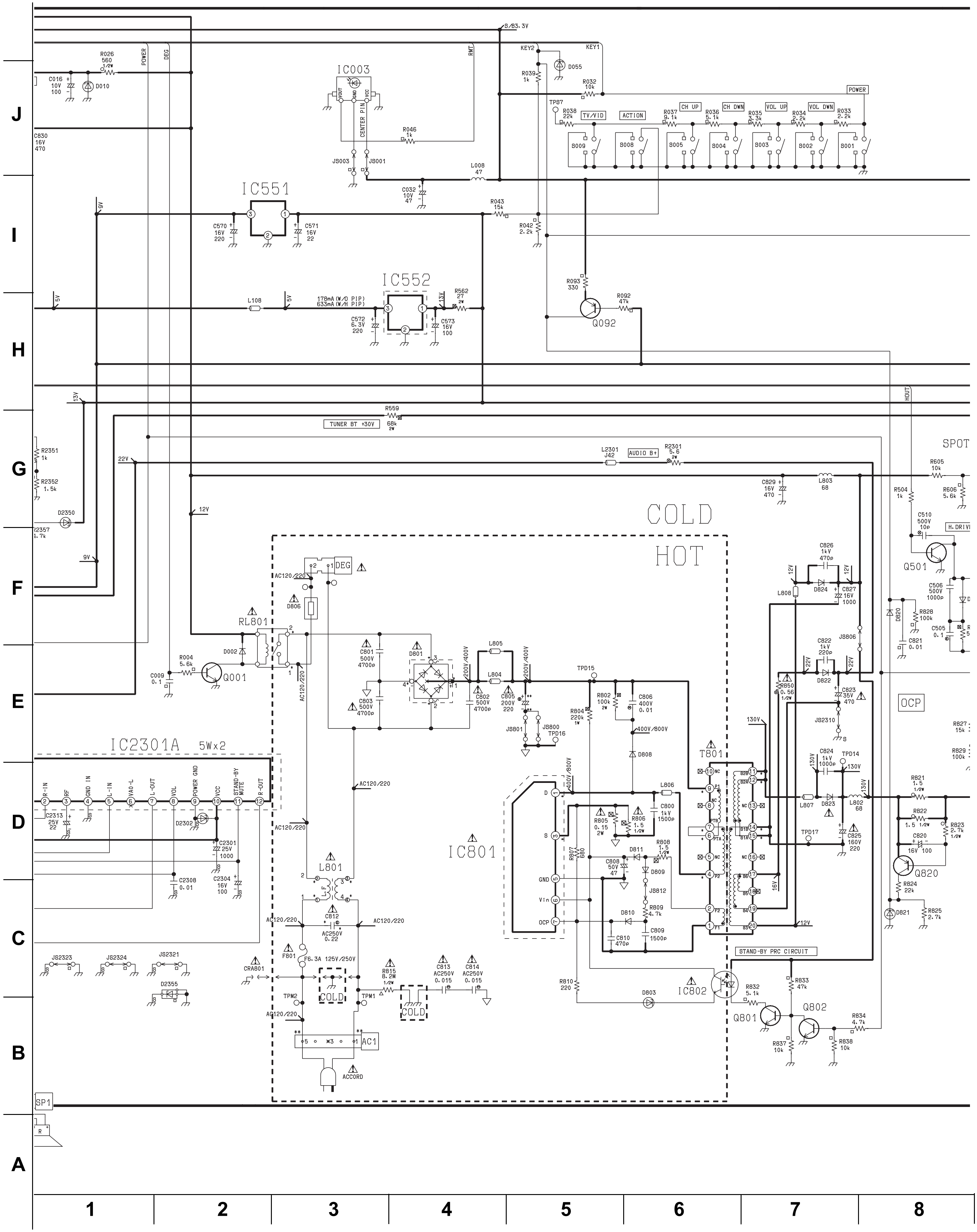
4
5
6
7
8
TNP2AH047AA/AB Ⓐ
A11
C1
TP47R
TP47G
TP47B
9V
R385 15 1/2W
50mA
45mA
C359 16V 470
Q354
Q355
Q356
Q357
Q358
Q359
Q360
Q361
Q362
R380 1.5k 1%
R381 1.5k 1%
R382 1.5k 1%
R374 1k
R375 1k
R376 1k
R377 330 1%
R378 330 1%
R379 330 1%
R371 100
R372 100
R373 100
R389 1k
R390 1k
R391 1k
R383 3.48k 1%
R384 750 1%
C360 50V 4.7
D380
D360
ROUT
GOUT
BOUT
R047 4.7k
R018 4.7k
C017 68p
JS4803
JS4814
5V
TNR001
AGC
TU
ADRS
SCL
SDA
NC
+B
BTL
IF1
TP
AUDIO
GND
AFT
AGC OUT
VIDEO
R025 100
R024 100
J107 L010 2.2
L012 2.2 J106
L015 3.3
C004 15p
C005 15p
C038 16V 47
160mA 255mA (W/H PIP)
L110 100
D006
C003 50V 4.7
C041 50V 2.2
C012 50V 0.1
TPA4
TPA5
AFC1
R005 470
C034 39p
L014 18
C035 12p
SCL1
SDA1
MTS S-AGC
IC2201
C2201 50V 4.7
R2201 220k
C3012 1 50V
C3018 1 50V
C2202 50V 2.2
C2203 50V 4.7
C2204 16V 10
C2205 50V 0.33
C2206 0.022
C2207 16V 3.3
C2208 16V 0.1
C2209 16V 0.1
C2214 10V 100
18mA
AGC
AUXL1
AUXR1
OFFCAN1
OFFCAN2
WB TIME
VCC
WB DET
SPEC FILTR
SPEC TIME
SPEC DET
NOISE DET
AUXL2
AUXR2
R OUT
L OUT
PE
SDA
SCL
GND
PLL
PILOT DET
MPX IN
SAP DET
(L1 for G model)
(R1 for G model)
TP43
TP44
TP49
TP50
TPE10
TPE11
TPE1
C2217 1000p
C2218 1000p
C2219 1
C2220 1
R2204 2.7k
R2203 2.7k
R2205 100
R2206 27k
C2216 10p
C2212 0.047
C2213 50V 0.47
C2210 16V 0.1
C2215 25V 10
R201 0
R202 2.2k
C3011 1
C3019 1
JS3101
JS2201
JS2202
R2207 1.5k
R2208 1.5k
R3009 6.8k
R3011 6.8k
R3102 330k
R3103 330k
R3020 6.8k
R3101 330k
R3019 6.8k
R3104 330k
FA1
R023 1k
SCL2
SDA2
RMT1
R021 100
R022 100
TP1
RMT
SDA2
SCL2
SDA1
SCL1
FA2
FA1
STBY12V

J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
DEG
SCL2
SDA2
POWER
RMT1
KEY2
KEY1
FA1
AFC1
SCL1
SDA1
D007
D003
R515
100
L003
3.3V
L001
JW
S/B5V
S/B3.3V
max 300mA
typ 215mA
IC005
STANDBY 5V
TPA13
R563
15
ON/OFF
IN
GND
OUT
C071
0.01
C020
16V
1000
C830
16V
470
C016
10V
100
STANDBY 3.3V
C019
6.3V
1000
C021
0.01
R048
100
R014
4.7k
C011
68p
R088
22k
L022 JW
C077
50V
10
C039
220p
R016
220
BOUT
GOUT
ROUT
L007
33
D001
C008
0.01
IC002
R001
10k
16K
I²C
EEPROM
WP
SCL1
SDA1
L006
R087
220
R078
10k
C031
22p
C079
22p
R040
68
R084
1.8k
X001
R041
2.2k
R017
220
R020
220
L005
J218
L002
JS016
C044
6.3V
1000
C043
1
R015
4.7k
L011
C010
68p
R019
4.7k
3.3V
C070
0.1
R075
39k 1%
C061
50V 10
L004
JW
R076
6.2k
R044
100
L020
R045
100
R008
22k
L013
L032
C013
68p
IC001
AMCV8
COMB/Sync Sepa/RGB/DEF/DET
Digital 1chip on farmware
V-DAF
DVDD
REMOTE IN
SDA0
H-DAF
DVDD
DVSS
VERSION
ACTION/GOS
KEY IN
AFC2
AFC1
/TESTMD
OSC2
OSC1
PDO
VCOI
AVDD
AVSS
BOUT
GOUT
ROUT
VIREF
VCOMP
VMOUT
AVDD
FBP IN
AVSS
EW
V-OUT
AVDD
FSC OUT
FSC IN
FPCO
AVSS
FVCO
H-OUT
HDOWN
EHTIN
SCL0
PV1
POWER
SERVICE
PV2
DEG SW
SDA2
SCL2
CV2
TILT
VOL
DVDD
DVSS
SYSCLK
S-VHS (V2)
WP
RST
IRQ
SP ON/OFF
CV1
PIP IRQ
BEAMIN
ABLIN
CREFL
CLL
PIPYS
YUV SW
PIPYS
PIPYIN
PIPUIN
AVDD
AVSS
VREFH
VREFM
MCOMPIN
VREFL
MSCIN
CREFH
MVIN
CLH
MUIN
C062
50V 10
C063
0.1
C064
16V
100
C083
0.01
R072
2.2k
R073
470
R074
470
C066
33p
C067
68p
R071
68
C068
16V 10
C072
220p
R520
470
C085
16V
0.1
C540
0.01
R533
100k
R532
22k
D531
C531
50V
4.7
R542
120k
R541
270k
R592
4.7k
C593
16V
47
R540
1M
3.3V
R512
2.2k
R514
3.9k
Q560
R401
JW
JS401
VOUT
R505
5.6k
C501
220p
IC501
HOUT
FBP
EHTIN
ACL
SPOTKILLER
5V
R050
1k
R055
10k
TP017
C048
1
IC004
NC
Vcc
SUB
GND
Vout
R009
1k
C046
0.01
R056
470
R007
470
R052
10k
TP412
R053
100
R065
100
R064
47k
C053
C054
C055
C056
R068 10k
R069 12k
C059
1
JS017
C051
1
C052
16V
100
R066
22k
R067
22k
C060
16V
22
C018
0.01
R070
560
L2350
JW
R2351
1k
R2356
100
C2350
16V
100
R2352
1.5k
D2353
D2350
R2357
4.7k
Q2350
C2312
50V
1
R2307
2.2k
R2370
2.2k
T3002
L.F
Q070
C073
100p
R062
4.7k
R061
220
C3025
50V
10
IC3001
TV
PV1
V1/Y1
PV2
GND
V/Y OUT
9V
V2/Y2
(V1 for G model)
VIDEO SW
2Vpp
10mA
C3014
16V
10
C3234
16V
47
C3240
0.01
R3035
5.6k
Q3001
R3002
220
R3036
18k
R3041
4.7k
R3034
470
C058
16V
10
C057
16V
10
R3038
5.6k
Q3002
R3003
220
R3039
18k
R3042
4.7k
R3037
470
22V
C2302
50V
1
VAO-R
R-IN
RF
C2313
25V
22
C3013
16V
10
R3012
100
JS3000
T3001
L.F
R3025
JW
C2317
16V
1000
R3018
100
C2307
16V
1000
R3016
180
JS2320
JS2323
R3004
100
R3001
JW
C3002
16V
22
R3026
100
D3008
D3007
D3009
D3010
D3012
D3011
D3024
D3023
C3001
16V
22
R3015
75 1%
R3014
75 1%
R3008
75 1%
R3006
750 5%
R3027
100
D2307
D2305
R3010
330k
R3005
330k
R3024
100
D3019
D3021
R3007
150 5%
R3017
180
D3018
D3017
D3001
L2307
JW
L2305
L2304
JW
L148
J148
R3021
100
R3013
75 1%
R3022
100
D3004
D3005
R3023
100
L312
COMPONENT:OPEN
COMPOSIT:CLOSE
JK3003
VIDEO2
REAR AV
USE ON AB ONLY
JK3001
JK3002
FRONT AV
SP1
L
R



J
I
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G
F
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D
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B
A
1
2
3
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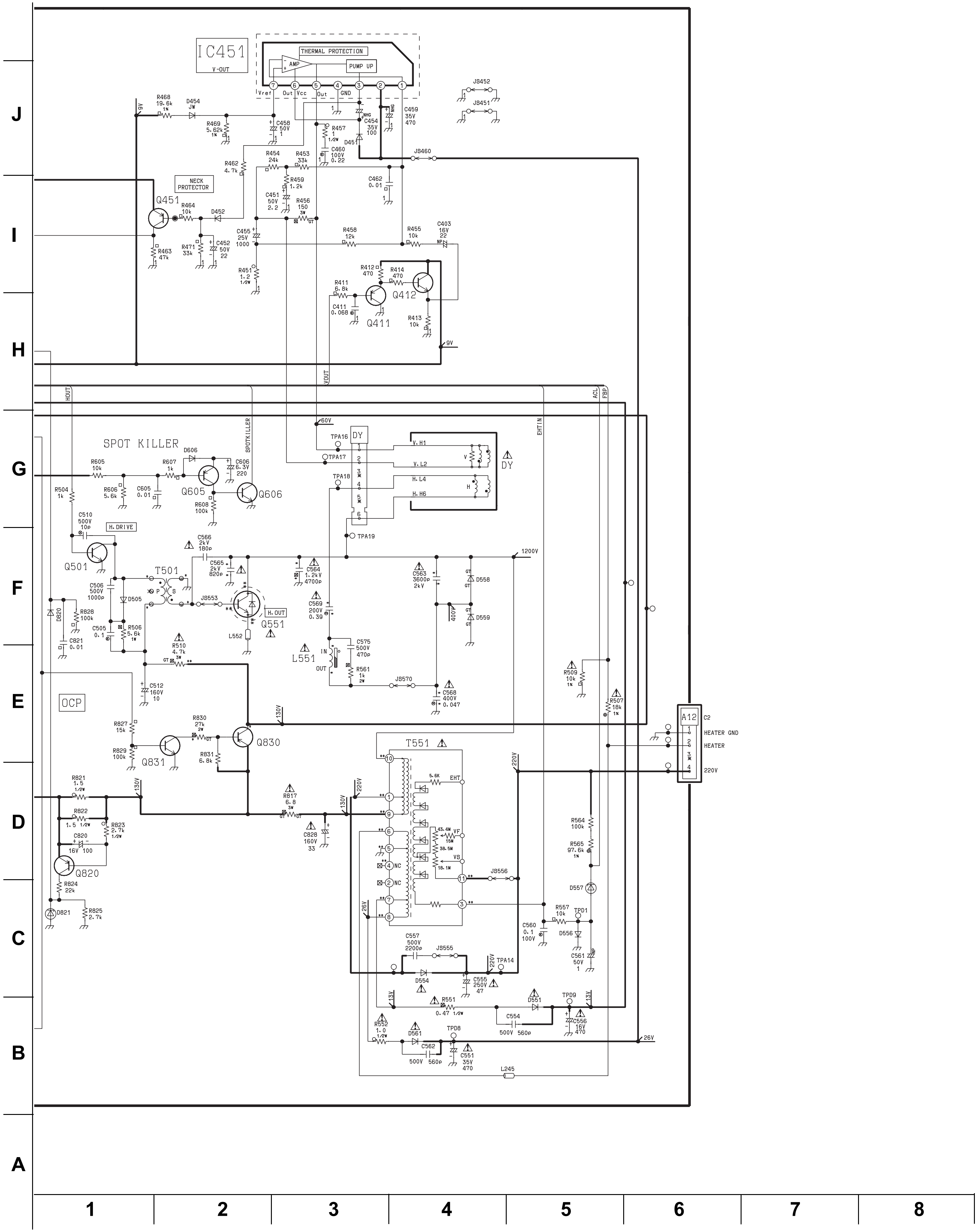
5
6
7
8
S/B3.3V
R026 560 1/2W
POWER
DEG
RMT
C016 10V 100
D010
C830 16V 470
IC003
CENTER PIN
R046 1k
JS003
JB001
KEY2
KEY1
D055
R039 1k
R032 10k
POWER
TPS7
R038 22k
TV/VID
ACTION
R037 9.1k
CH UP
R036 5.1k
CH DWN
R035 3.3k
VOL UP
R034 2.2k
VOL DWN
R033 2.2k
S009
S008
S005
S004
S003
S002
S001
L008 47
C032 10V 47
IC551
C570 16V 220
C571 16V 22
9V
R043 15k
R042 2.2k
R093 330
Q092
R092 47k
5V
L108
178mA (W/O PIP)
633mA (W/H PIP)
IC552
13V
R562 27 2W
C572 6.3V 220
C573 16V 100
R559 68k 2W
TUNER BT +30V
HOUT
R2351 1k
R2352 1.5k
22V
L2301 J42
AUDIO B+
R2301 5.6 2W
SPOT
R605 10k
C829 16V 470
L803 68
R504 1k
R606 5.6k
D2350
R2357 4.7k
12V
COLD
HOT
C510 500V 10p
H.DRIVE
Q501
DEG
AC120/220
C826 1kV 470p
D824
C827 16V 1000
L808
C506 500V 1000p
D820
R828 100k
C821 0.01
C505 0.1
RL801
D806
D002
R004 5.6k
Q001
C009 0.1
C801 500V 4700p
D801
L805
L804
200V/400V
C802 500V 4700p
C803 500V 4700p
C805 200V 220
TPD15
R802 100k 2W
C806 400V 0.01
R804 220k 1W
JS801
JS800
TPD16
400V/800V
D808
JS806
C822 1kV 220p
D822
C823 35V 470
R850 0.56 1/2W
JS2310
130V
OCP
R827 15k
R829 100k
IC2301A 5Wx2
R-IN
RF
GND IN
L-IN
VAO-L
L-OUT
VOL
POWER GND
VCC
STAND-BY MUTE
R-OUT
C2313 25V 22
D2302
C2301 25V 1000
C2308 0.01
C2304 16V 100
AC120/220
L806
C800 1kV 1500p
R805 0.15 2W
R806 1.5 1/2W
IC801
D
S
GND
Vin
OCP
R807 680
C808 50V 47
D811
R808 1.5 1/2W
D809
JS812
R809 4.7k
D810
C810 470p
C809 1500p
T801
C824 1kV 1000p
TPD14
L807
D823
L802 68
C825 160V 220
TPD17
R821 1.5 1/2W
R822 1.5 1/2W
R823 2.7k 1/2W
C820 16V 100
Q820
R824 22k
D821
R825 2.7k
16V
L801
C812 AC250V 0.22
F801
F6.3A 125V/250V
R815 8.2M 1/2W
C813 AC250V 0.015
C814 AC250V 0.015
CRA801
TPM2
TPM1
COLD
AC1
ACCORD
JS2323
JS2324
JS2321
D2355
STAND-BY PRC CIRCUIT
R810 220
D803
IC802
R832 5.1k
R833 47k
Q801
Q802
R834 4.7k
R837 10k
R838 10k
SP1
R

A-BOARD 3 of 4 TNP2AH047AA/AB CT-20L8G / CT-20G8G / CT-20G8SG



IC451
V-OUT
THERMAL PROTECTION
AMP
PUMP UP
Vref
Out
Vcc
Out
GND
R468 19.6k 1%
D454 JW
R469 5.62k 1%
C458 50V 1
R457 1 1/2W
C454 35V 100
D451
C459 35V 470
C460 100V 0.22
JS452
JS451
JS460
R462 4.7k
R454 24k
R453 33k
R459 1.2k
C462 0.01
NECK PROTECTOR
Q451
R464 10k
D452
C451 50V 2.2
R456 150 3W
C455 25V 1000
R458 12k
R455 10k
C403 16V 22
R471 33k
C452 50V 22
R463 47k
R451 1.2 1/2W
R412 470
R414 470
R411 6.8k
Q412
Q411
C411 0.068
R413 10k
9V
VOUT
HOUT
SPOTKILLER
ACL
FBP
EHTIN
60V
TPA16
TPA17
TPA18
TPA19
DY
V.H1
V.L2
H.L4
H.H6
SPOT KILLER
R605 10k
R607 1k
D606
C606 6.3V 220
R606 5.6k
C605 0.01
Q605
Q606
R608 100k
R504 1k
C510 500V 10p
H.DRIVE
Q501
C566 2kV 180p
C565 2kV 820p
C564 1.2kV 4700p
C563 3600p 2kV
D558
D559
400V
1200V
T501
C506 500V 1000p
D505
JS553
Q551
H.OUT
D820
R828 100k
C505 0.1
R506 5.6k 1W
L552
C821 0.01
C569 200V 0.39
C575 500V 470p
L551
IN
OUT
R561 1k 2W
JS570
C568 400V 0.047
R510 4.7k 3W
C512 160V 10
R509 10k 1%
R507 18k 1%
OCP
R827 15k
R830 27k 2W
130V
Q830
R829 100k
Q831
R831 6.8k
A12
C2
HEATER GND
HEATER
220V
T551
5.6K
EHT
43.4M
15M
38.5M
18.1M
VF
VS
NC
JS556
R821 1.5 1/2W
R822 1.5 1/2W
R823 2.7k 1/2W
C820 16V 100
Q820
R824 22k
D821
R825 2.7k
R817 6.8 3W
C828 160V 33
R564 100k
R565 97.6k 1%
D557
26V
R557 10k
TPD1
C560 0.1 100V
D556
C561 50V 1
C557 500V 2200p
JS555
TPA14
D554
C555 250V 47
13V
R551 0.47 1/2W
D551
TPD9
C554 500V 560p
C556 16V 470
R552 1.0 1/2W
D561
TPD8
C562 500V 560p
C551 35V 470
L245
J
I
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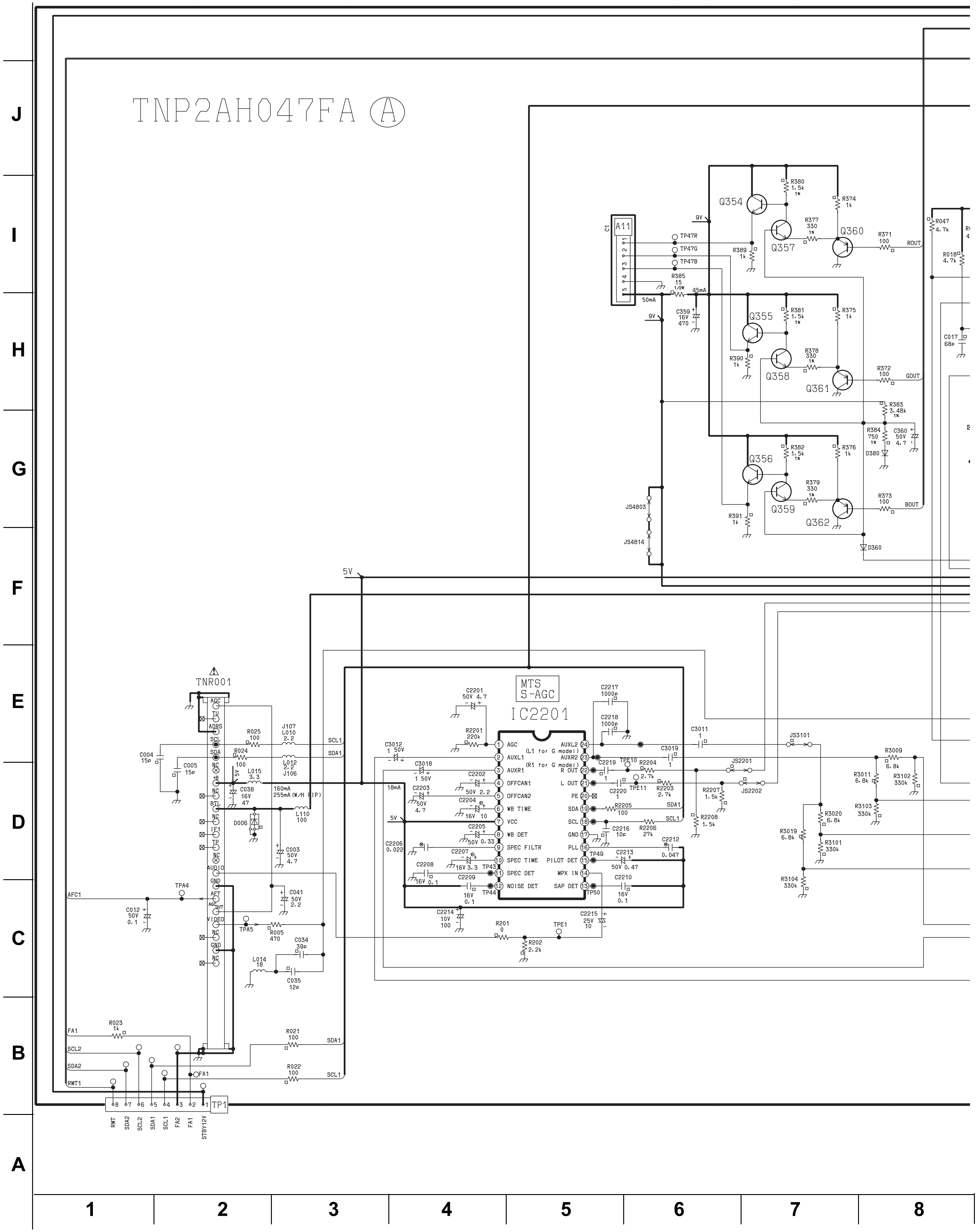
TNP2AH047FA Ⓐ
J
I
H
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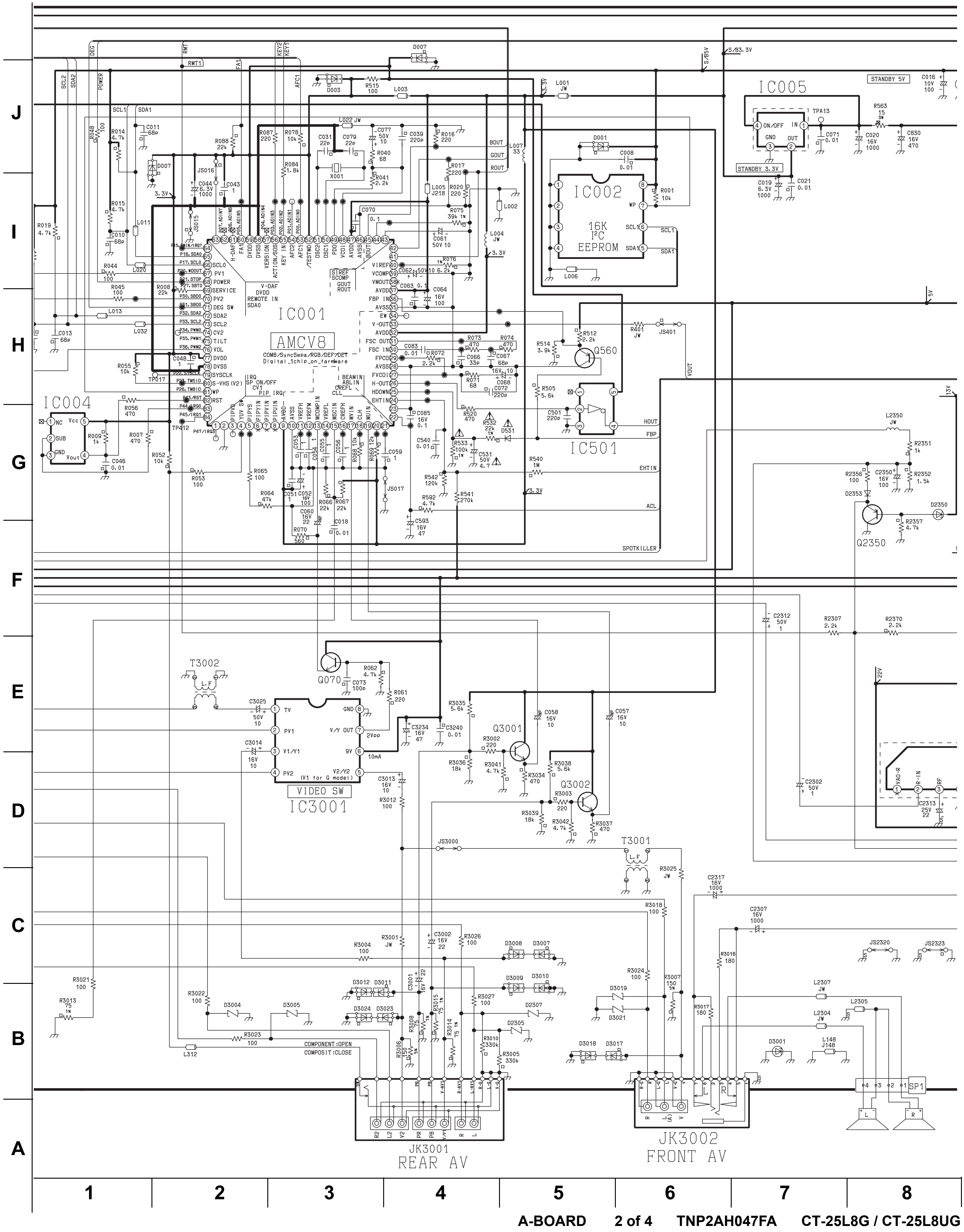
D
C
B
A
1
2
3
4
5
6
7
8
C1
A11
TP47R
TP47G
TP47B
R385 15 1/2W
45mA
50mA
C359 16V 470
9V
Q354
Q355
Q356
Q357
Q358
Q359
Q360
Q361
Q362
R380 1.5k 1%
R381 1.5k 1%
R382 1.5k 1%
R374 1k
R375 1k
R376 1k
R377 330 1%
R378 330 1%
R379 330 1%
R389 1k
R390 1k
R391 1k
R371 100
R372 100
R373 100
ROUT
GOUT
BOUT
R047 4.7k
R018 4.7k
C017 68p
R383 3.48k 1%
R384 750 1%
C360 50V 4.7
D380
D360
JS4803
JS4814
5V
TNR001
AGC
TU
ADRS
SCL
SDA
NC
+B
NC
BTL
NC
IF1
TP
NC
AUDIO
GND
AFT
AGC OUT
VIDEO
NC
GND
NC
R025 100
R024 100
C004 15p
C005 15p
J107 L010 2.2
L012 2.2 J106
L015 3.3
C038 16V 47
160mA 255mA (W/H PIP)
L110 100
D006
C003 50V 4.7
C041 50V 2.2
TPA4
AFC1
C012 50V 0.1
TPA5
R005 470
C034 39p
L014 18
C035 12p
SCL1
SDA1
MTS S-AGC
IC2201
C2201 50V 4.7
R2201 220k
C3012 1 50V
C3018 1 50V
C2202 50V 2.2
C2203 50V 4.7
C2204 16V 10
C2205 50V 0.33
C2206 0.022
C2207 16V 3.3
C2208 16V 0.1
C2209 16V 0.1
18mA
TP43
TP44
1 AGC
2 AUXL1
3 AUXR1
4 OFFCAN1
5 OFFCAN2
6 WB TIME
7 VCC
8 WB DET
9 SPEC FILTR
10 SPEC TIME
11 SPEC DET
12 NOISE DET
24 AUXL2
23 AUXR2
22 R OUT
21 L OUT
20 PE
19 SDA
18 SCL
17 GND
16 PLL
15 PILOT DET
14 MPX IN
13 SAP DET
(L1 for G model)
(R1 for G model)
C2217 1000p
C2218 1000p
C2219 1
TPE10
R2204 2.7k
C2220 1
TPE11
R2203 2.7k
R2205 100
C2216 10p
R2206 27k
C2212 0.047
TP49
C2213 50V 0.47
TP50
C2210 16V 0.1
C2214 10V 100
C2215 25V 10
R201 0
R202 2.2k
TPE1
C3011 1
C3019 1
JS3101
JS2201
JS2202
R2207 1.5k
R2208 1.5k
R3009 6.8k
R3011 6.8k
R3102 330k
R3103 330k
R3020 6.8k
R3019 6.8k
R3101 330k
R3104 330k
FA1
SCL2
SDA2
RMT1
R023 1k
R021 100
R022 100
TP1
8 RMT
7 SDA2
6 SCL2
5 SDA1
4 SCL1
3 FA2
2 FA1
1 STBY12V

**A-BOARD 1 of 4 TNP2AH047FA CT-25L8G / CT-25L8UG**



IC001
AMCV8
COMB/SyncSepa/RGB/DEF/DET
Digital_1chip_on_farmware
IC002
16K
I²C
EEPROM
IC005
STANDBY 5V
STANDBY 3.3V
IC004
IC501
Q560
Q070
Q3001
Q3002
Q2350
T3002
T3001
IC3001
VIDEO SW
V1 for G model
COMPONENT:OPEN
COMPOSIT:CLOSE
JK3001
REAR AV
JK3002
FRONT AV
SP1
J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8

**A-BOARD 2 of 4 TNP2AH047FA CT-25L8G / CT-25L8UG**